VERIFICATION AND VALIDATION

GOAL 1 OBJECTIVE 1

FY 2007 Performance Measures:

- **Tons of SO_2 emissions from electric power generation sources (tons/yr from 1980 baseline) (PART measure)**
- **Percent change in average sulfur deposition and mean ambient sulfate concentrations reduced (% from baseline) (PART measure)**
- **Percent change in average nitrogen deposition and mean ambient nitrate concentrations reduced (% from baseline) (PART measure)**
- **Percent change in number of chronically acidic water bodies in acid-sensitive regions (PART measure)**

Performance Databases:

- Emissions Tracking System (ETS) - SO_2 and NO_x emissions
- Clean Air Status and Trends Network (CASTNET) - dry deposition
- National Atmospheric Deposition Program (NADP) - wet deposition
- Temporally Integrated Monitoring of Ecosystems program (TIME) - surface water chemistry
- Long-Term Monitoring Network program (LTM) – surface water chemistry

Data Sources: On a quarterly basis, ETS receives and processes hourly measurements of SO_2, NO_x, volumetric flow, CO_2, and other emission-related parameters from more than 3,400 fossil fuel-fired utility units affected under the Title IV Acid Rain Program. These measurements are collected by certified continuous emission monitoring systems (CEMS) or equivalent continuous monitoring methods.

CASTNET measures particle and gas acidic deposition chemistry. Specifically, CASTNET measures sulfate and nitrate dry deposition and meteorological information at approximately 88 monitoring sites, primarily in the East. Two additional sites are planned as part of a multi-year network refurbishment and modernization project . These sites are scheduled to be in operation by 2007 and will help fill the coverage gap in the middle of country. CASTNET is a long-term dry deposition network funded, operated and maintained by EPA's Office of Air and Radiation (OAR). The National Park Service operates approximately 30 of the monitoring stations in cooperation with EPA.

NADP is a national long-term wet deposition network that measures precipitation chemistry and provides long-term geographic and temporal trends in concentration and deposition of precipitation components. Specifically, NADP provides measurements of sulfate and nitrate wet deposition at approximately 255 monitoring sites. EPA, along with several other Federal agencies, states, and private organizations, provide funding and support for NADP. The Illinois State Water Survey/University of Illinois maintains the NADP database.

The deposition monitoring networks have been in operation for over 25 years. They provide invaluable measurements on long-term trends and episodes in acid deposition; such data are essential for assessing progress toward the program's intended environmental outcomes. These networks need to be modernized to ensure the continued availability of these direct environmental measures. Maintaining a robust long-term atmospheric deposition monitoring network is critical for the accountability of the Acid Rain and Clean Air Interstate Rule (CAIR) Programs (and/or Clear Skies if new legislation is enacted).

The TIME project measures surface water chemistry and is based on the concept of a probability sample, where each site is chosen to be statistically representative of a target population. In the Northeast (New England and the Adirondacks), this target population consists of lakes likely to be responsive to changes in rates of acidic deposition (i.e., those with Gran ANC < 100 μeq/L). In the Mid-Atlantic, the target population is upland streams with a high probability of responding to changes in acidic deposition (i.e., Northern Appalachian Plateau streams with Gran ANC < 100 μeq/L). Each lake or stream is sampled annually (in summer for lakes, in spring for streams), and results are extrapolated to the target population. The most recent (2003) TIME trends analysis reported data from 43 Adirondack lakes, 30 New England lakes, and 31Appalachian Plateau streams.

The TIME project goals are to determine not only how a representative sample of water bodies is changing through time, but also whether the proportion of the population that is acidic has changed. The project is operated cooperatively with numerous collaborators in state agencies, academic institutions and other federal agencies.

The LTM project complements TIME's statistical approach to sampling lakes and streams. LTM samples a subset of sensitive lakes and streams with long-term data, most dating back to the early 1980s. These sites are sampled 3 to 15 times per year. This information is used to characterize how the most sensitive aquatic systems in each region are responding to changing deposition, as well as providing information on seasonal chemistry and episodic acidification. In most regions, a small number of higher ANC (e.g., GranANC >100 μeq/L) sites are also sampled, and help separate temporal changes due to acidic deposition from those attributable to other disturbances such as changes in land use. The most recent (2003) LTM trends analysis reported data from 48 Adirondack lakes, 24 New England lakes, 9 Northern Appalachian Plateau streams, and 69 streams in the Blue Ridge region of Virginia and West Virginia. The project is operated cooperatively with numerous collaborators in state agencies, academic institutions and other federal agencies.

Methods, Assumption, and Suitability Promulgated methods are used to aggregate emissions data across all United States' utilities for each pollutant and related source operating parameters such as heat input.

QA/QC Procedures:
Promulgated QA/QC requirements dictate performing a series of quality assurance tests of CEMS performance. For these tests, emissions data are collected under highly structured, carefully designed testing conditions, which involve either high quality standard reference

materials or multiple instruments performing simultaneous emission measurements. The resulting data are screened and analyzed using a battery of statistical procedures, including one that tests for systematic bias. If a CEM fails the bias test, indicating a potential for systematic underestimation of emissions, the source of the error must be identified and corrected or the data are adjusted to minimize the bias. Each affected plant is required to maintain a written QA plan documenting performance of these procedures and tests. Further information is available at: http://www.epa.gov/airmarkets/reporting/index.html.

CASTNET established a Quality Assurance Project Plan (QAPP) in November 2001; The QAPP contains data quality objectives and quality control procedures for accuracy and precision. {U.S. EPA, Office of Air Quality Planning and Standards, *Clean Air Status and Trends Network (CASTNet) Quality Assurance Project Plan* (Research Triangle Park, NC: U.S. EPA, November 2001). In addition, the program publishes annual quality assurance reports. Both the CASTNET QAPP and 2003 Annual Quality Assurance Report may be found at http://www.epa.gov/castnet/library.html.

NADP has established data quality objectives and quality control procedures for accuracy, precision and representation, available on the Internet: http://nadp.sws.uiuc.edu/QA/. The intended use of these data is to establish spatial and temporal trends in wet deposition and precipitation chemistry.

For TIME and LTM, the field protocols, laboratory methods, and quality assurance procedures are specific to each research group. QA/QC information is contained in the cited publications of each research group and compiled in Newell et al. (1987). The EMAP and TIME protocols and quality assurance methods are generally consistent with those of the LTM cooperators, and are detailed in Peck (1992) and in Table 3 of Stoddard et al (2003).

Data Quality Review:
The ETS provides instant feedback to sources on data reporting problems, format errors, and inconsistencies. The electronic data file QA checks are described at http://www.epa.gov/airmarkets/reporting/index.html (see *Electronic Data Report Review Process, ETS Tolerance Tables*, *Active ETS Error Codes/Messages* and *Range Format Errors*). All quarterly reports are analyzed to detect deficiencies and to identify reports that must be resubmitted to correct problems. EPA also identifies reports that were not submitted by the appropriate reporting deadline. Revised quarterly reports, with corrected deficiencies found during the data review process, must be obtained from sources by a specified deadline. All data are reviewed, and preliminary and final emissions data reports are prepared for public release and compliance determination.

CASTNET underwent formal peer review in 1997 by a panel of scientists from EPA and the National Oceanographic Atmospheric Administration (NOAA). Findings are documented in *Examination of CASTNET: Data, Results, Costs, and Implications* (United States EPA, Office of Research and Development, National Exposure Research Laboratory, February 1997).

The NADP methods of determining wet deposition values have undergone extensive peer review; this process has been managed by NADP program office at the Illinois State Water

Survey/University of Illinois. Assessments of changes in NADP methods are developed primarily through the academic community and reviewed through the technical literature process.

The TIME and LTM data used in EPA trends analysis reports are screened for internal consistency among variables, including ion balance and conductance balance. Samples with unexplained variation in these variables are deleted. Sites with mean Gran ANC greater than 200 μeq/L also are deleted. EPA trends analyses exclude sites with chloride values that are outliers in their region, because high Cl- is typically associated with human development in the watershed. The Cl- and associated Na+ would alter normal soil ion exchange relationships, thus obscuring the response to acidic deposition.

Data Limitations: In order to improve the spatial resolution of CASTNET, additional monitoring sites are needed, particularly in the middle of the country.

Error Estimate: None

New/Improved Data or Systems: The program plans to modernize and enhance CASTNET to ensure network viability and enhance the monitoring capacity to support ongoing and future accountability needs, particularly relating to long range pollutant transport. The refurbishment of CASTNET will result in more comprehensive air quality data and information, made available faster by enabling real-time access to air quality information and promoting integration with other networks through regional/rural monitoring strategies. Refurbishment activities to be pursued in FY 2007 include: (1) completion of a pilot phase study to evaluate options for upgrading CASTNET with new advanced measurement instrumentation; (2) selection and procurement of advanced technology monitoring equipment for up to 10 sites; (3) establishment of 2 new sites in the middle of the country to improve geographic coverage and spatial resolution; and (4) implementation of new ecological indicators of air quality and atmospheric deposition to expand the suite of environmental metrics available for measuring the performance and efficiency of EPA's clean air programs.

References: For additional information about CASTNET, see http://www.epa.gov/castnet.html and for NADP, see http://nadp.sws.uiuc.edu/.

For a description of EPA's Acid Rain program, see
http://www.epa.gov/airmarkets/arp/index.html/ and in the electronic Code of Federal Regulations at http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-C.html (40 CFR parts 72-78.)

For TIME and LTM data quality and QA/QC procedures, see
Newell, A. D., C. F. Powers, and S. J. Christie. 1987. Analysis of Data from Long-term monitoring of Lakes. U.S. Environmental Protection Agency, Corvallis, OR.

Peck, D. V. 1992. Environmental Monitoring and Assessment Program: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group. EPA/600/X-91/080, U.S. Environmental Protection Agency.

Stoddard, J. L., J. S. Kahl, F. A. Deviney, D. R. DeWalle, C. T. Driscoll, A. T. Herlihy, J. H. Kellogg, P. S. Murdoch, J. R. Webb, and K. E. Webster. 2003. Response of surface water chemistry to the Clean Air Act Amendments of 1990. EPA/620/R-03/001, U.S. Environmental Protection Agency, Corvallis, Oregon.

FY 2007 Performance Measures:

- **Reduction in population-weighted ambient concentration of fine particulate matter (PM 2.5) in all monitored counties (PART measure)**

- **Reduction in population-weighted ambient concentration of ozone in monitored counties (PART measure)**

Performance Databases:

AQS —The Air Quality Subsystem (AQS) stores ambient air quality data used to evaluate an area's air quality levels relative to the NAAQS.

FREDS—The Findings and Required Elements Data System is used to track progress of states and Regions in reviewing and approving the required data elements of the State Implementation Plans (SIP). SIPs are clean air plans and define what actions a state will take to improve the air quality in areas that do not meet national ambient air quality standards

Data Sources:
AQS: State & local agency data from State and Local Air Monitoring Stations (SLAMS).

Population: Data from Census-Bureau/Department of Commerce

FREDS: Data are provided by EPA's Regional offices.

Methods, Assumptions, and Suitability: Design values are calculated for every county with adequate monitoring data (for more information on and a definition for design values, see www.epa.gov/ttn/oarpg/t1/memoranda/cdv.pdf). Air quality levels are evaluated relative to the baseline level and the design value. The change in air quality concentrations is then multiplied by the number of people living in the county. This analysis assumes that the populations of the areas are held constant at 2000 Census levels. Data comparisons over several years allow assessment of the air program's success.

QA/QC Procedures: AQS: The QA/QC of the national air monitoring program has several major components: the Data Quality Objective (DQO) process, reference and equivalent methods program, EPA's National Performance Audit Program (NPAP), system audits, and network reviews (Available on the Internet: www.epa.gov/ttn/amtic/npaplist.html). To ensure quality data, the SLAMS are required to meet the following: 1) each site must meet network design and site criteria; 2) each site must provide adequate QA assessment, control, and corrective action functions according to minimum program requirements; 3) all sampling methods and equipment must meet EPA reference or equivalent requirements; 4) acceptable data validation and record keeping procedures must be followed; and 5) data from SLAMS must be summarized and

reported annually to EPA. Finally, there are system audits that regularly review the overall air quality data collection activity for any needed changes or corrections. Further information available on the Internet: http://www.epa.gov/cludygxb/programs/namslam.html and through United States EPA's Quality Assurance Handbook (EPA-454/R-98-004 Section 15)

Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.

FREDS: No formal QA/QC procedures.

Data Quality Review:
AQS: No external audits have been done in the last 3 years. However, internal audits are regularly conducted.

Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.

FREDS: None

Data Limitations:
AQS: None known

Populations: Not known

FREDS: None known

Error Estimate: At this time it is not possible to develop an error estimate. There is still too much uncertainty in the projections and near term variations in air quality (due to meteorological conditions for example) exist.

New/Improved Data or Systems:
AQS: In January 2002, EPA completed the reengineering of AQS to make it a more user friendly, Windows-based system. As a result, air quality data are more easily accessible via the Internet. AQS has also been enhanced to comply with the Agency's data standards (*e.g.*, latitude/longitude, chemical nomenclature). Beginning in July 2003, agencies submitted air quality data to AQS thru the Agency's Central Data Exchange (CDX). CDX is intended to be the portal through which all environmental data coming to or leaving the Agency will pass.

Population: None

FREDS: None

References: For additional information about criteria pollutant data, non-attainment areas, and other related information, see: http://www.epa.gov/airtrends/.

FY 2007 Performance Measures:

- **Percent of significant Title V operating permit revisions issued within 18 months of receiving a complete permit application. (PART measure)**
- **Percent of new Title V operating permits issued within 18 months of receiving a complete permit application. (PART measure)**

Performance Databases: TOPS (Title V Operating Permit System).

Data Sources: Permitting Agencies (State and Local) via EPA Regional Offices

Methods, Assumptions, and Suitability: The performance measure is calculated by comparing the number of new permits or significant permit modifications issued during past 18 months to the total number of new permits or significant permit modifications received during the same period. Data are collected every 6 months. There are no underlying assumptions in the development of this measure.

QA/QC Procedures: Some data quality checks include: 1) making sure the number of permits issued in 18 months is equal to or less than the total number of permits received. 2) ensuring the percentages seem reasonable compared to previous reporting periods, and 3) making sure clock does not restart when additional information is submitted after the application is received.

Data Quality Review: Same as QA procedures

Data Limitations: None

Error Estimate: There is no estimate on the number of errors that could have been made during data entry.

New/Improved Data or Systems: TOPS has been revised and improved for 2006 to ensure better consistency between states and to specifically track PART measures.

References: For additional information about criteria pollutant data, non-attainment areas, and other related information, see: http://www.epa.gov/airtrends/.

FY 2007 Performance Measures:

- **Percent of major NSR permits issued within one year of receiving a complete permit application. (PART measure)**

Performance Databases: RBLC (RACT (Reasonably Available Control Technology) BACT (Best Available Control Technology) LAER (Lowest Achievable Emissions Rate) Clearinghouse)

Data Sources: Permitting Agencies (State and Local)

Methods, Assumptions, and Suitability: The performance measure is calculated by determining the time period between the date of complete permit application and permit

issuance. The percentage represents the number of major NSR permits issued within one year of complete application to the total number of permits issued within that same period. There are no underlying assumptions in the development of this performance measure.

QA/QC Procedures: Some data quality checks include: 1) making sure the permit issuance dates are after the complete permit application dates and appear reasonable, 2) ~~t~~ ensuring the permit processing times are similar for comparable permits in previous reporting periods and 3) making sure the time period does not restart when additional information is submitted after the application is received.

Data Quality Review: Same as QA procedures

Data Limitations: None

Error Estimate: There is no estimate on the number of errors that could have been made during data entry.

New/Improved Data or Systems: N/A

References: For additional information about criteria pollutant data, non-attainment areas, and other related information, see: http://www.epa.gov/airtrends/.

FY 2007 Performance Measure:

- **Cumulative percent reduction in the number of days with Air Quality Index (AQI) values over 100 since 2003, weighted by population and AQI value. (PART measure)**

Performance Databases:

AQS —The Air Quality Subsystem (AQS) stores ambient air quality data used to evaluate an area's air quality levels relative to the NAAQS.

AIRNow DMC –The AIRNow Data Management System (DMC) stores real-time ambient air quality data used for the sole purpose of reporting real-time AQI and air quality forecasting.

Data Sources:

AQS/DMC: State & local agency data from State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS).

Methods, Assumptions, and Suitability:

Data are gathered from monitors using EPA-approved federal reference and/or equivalent methods, all of which are published via the Federal Register. EPA assumes the collecting agency has properly maintained each monitor and that the data sent to EPA have passed at least

an automated QA/QC check. The monitoring networks have been providing data for decades and the data are considered highly reliable. In addition these data form the basis of EPA's attainment decisions, trend analysis, and health impact assessments.

QA/QC Procedures:

AQS: The QA/QC of the national air monitoring program has several major components: the Data Quality Objective (DQO) process, reference and equivalent methods program, EPA's National Performance Audit Program (NPAP), system audits, and network reviews (Available on the Internet: www.epa.gov/ttn/amtic/npaplist.html). To ensure quality data, the SLAMS are required to meet the following: 1) each site must meet network design and site criteria; 2) each site must provide adequate QA assessment, control, and corrective action functions according to minimum program requirements; 3) all sampling methods and equipment must meet EPA reference or equivalent requirements; 4) acceptable data validation and record keeping procedures must be followed; and 5) data from SLAMS must be summarized and reported annually to EPA. Finally, there are system audits that regularly review the overall air quality data collection activity for any needed changes or corrections. Further information available on the Internet: http://www.epa.gov/cludygxb/programs/namslam.html and through United States EPA's Quality Assurance Handbook (EPA-454/R-98-004 Section 15)

DMC: The QA/QC procedures at each State, local, Tribal, or Federal agency are the same as documented above. Because the DMC handles real-time data, additional QA/QC data checks are built into the data flow process to further guard against erroneous values being passed through the system. Data in the DMC are not considered final and are not used for any regulatory purpose. Data in the AQS system are the official values used for regulatory analyses.

Data Quality Review:

AQS: No external audits have been done in the last 3 years. However, internal audits are regularly conducted.

DMC: No external audits have been done in the last 3 years. However, internal audits are regularly conducted and data are routinely processed by external users where applicable.

Data Limitations:

AQS: None known

DMC: None known

Error Estimate: At this time it is not possible to develop an error estimate. There is still too much uncertainty in the projections and near term variations in air quality (due to meteorological conditions for example) exist.

New/Improved Data or Systems:

AQS: In January 2002, EPA completed the reengineering of AQS to make it a more user friendly, Windows-based system. As a result, air quality data are more easily accessible via the Internet. AQS has also been enhanced to comply with the Agency's data standards (*e.g.*, latitude/longitude, chemical nomenclature). Beginning in July 2003, agencies submitted air quality data to AQS thru the Agency's Central Data Exchange (CDX). CDX is intended to be the portal through which all environmental data coming to or leaving the Agency will pass.

DMC: AIRNow Data Management Center was redesigned in 2004 to more efficiently handle additional pollutants and provide for easier access to real-time data. In addition, automated QA/QC procedures were updated and increased flexibility for state/local agencies to update information was included.

References: For additional information about criteria pollutant data, non-attainment areas, and other related information, see: http://www.epa.gov/airtrends/. For more information on the monitoring network, as well as reference and equivalent methods, see the Ambient Monitoring Technology Information Center (AMTIC) at: http://www.epa.gov/ttn/amtic . For information on the AIRNow real-time program, see: http://www.airnow.gov/.

FY 2007 Performance Measures:

- **VOC reduced from mobile sources (PART measure)**
- **NOx reduced from mobile sources (PART measure)**
- **PM 10 reduced from mobile sources (PART measure)**
- **PM 2.5 reduced from mobile sources (PART measure)**
- **Limit the increase of CO Emissions (in tons) from mobile sources (PART measure)**

Performance Database: National Emissions Inventory Database. See: http://www.epa.gov/ttn/chief/trends/

Data Source: Mobile source emissions inventories and Regulatory Impact Analyses

Estimates for on-road, off-road mobile source emissions are built from inventories fed into the relevant models, which in turn provide input to the National Emissions Inventory Database.

The MOBILE vehicle emission factor model is a software tool for predicting gram per mile emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, carbon dioxide, particulate matter, and toxics from cars, trucks, and motorcycles under various conditions. Inputs to the model include fleet composition, activity, temporal information, and control program characteristics.

The NONROAD emission inventory model is a software tool for predicting emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, particulate matter, and sulfur dioxides from small and large off road vehicles, equipment, and engines. Inputs to the model include fleet composition, activity and temporal information.

Certain mobile source information is updated annually. Inputs are updated annually only if there is a rationale and readily available source of annual data. Generally, Vehicle Miles Traveled (VMT), the mix of VMT by type of vehicle (Federal Highway Administration (FHWA)-types), temperature, gasoline properties, and the designs of Inspection/Maintenance (I/M) programs are updated each year. Emission factors for all mobile sources and activity estimates for non-road sources are changed only when the Office of Transportation and Air Quality requests that this be done and is able to provide the new information in a timely manner. The most recent models for mobile sources are Mobile 6 and Nonroad 2002. (Available on the Internet at http://www.epa.gov/otaq/models.htm.)

EPA regulatory packages always include detailed Regulatory Impact Analysis which estimates the costs industry is projected to accrue in meeting EPA regulations. These cost estimates will form the basis of the numbers in the EPA performance measures. Also, costs for the EPA mobile source program (including personnel costs) will be included also. Estimates will be made for various years for tons/dollar for pollutants (the total of HC, CO, NOx, and PM) removed.

Methods, Assumptions, and Suitability: EPA issues emissions standards that set limits on how much pollution can be emitted from a given mobile source. Mobile sources include vehicles that operate on roads and highways ("on road" or "highway" vehicles), as well as nonroad vehicles, engines, and equipment. Examples of mobile sources are cars, trucks, buses, earthmoving equipment, lawn and garden power tools, ships, railroad locomotives, and airplanes. Vehicle and equipment manufacturers have responded to many mobile source emission standards by redesigning vehicles and engines to reduce pollution.

EPA uses models to estimate mobile source emissions, for both past and future years. The estimates are used in a variety of different settings. The estimates are used for rulemaking.

The most complete and systematic process for making and recording such mobile source emissions is the “Trends” inventory process executed each year by the Office of Air Quality Planning and Standards’ (OAQPS) Emissions, Monitoring, and Analysis Division (EMAD). The Assessment and Standards Division, within the Office of Transportation and Air Quality, provides EMAD information and methods for making the mobile source estimates. In addition, EMAD’s contractors obtain necessary information directly from other sources; for example, weather data and the Federal Highway Administration’s (FHWA) Vehicle Miles Traveled (VMT) estimates by state. EMAD creates and publishes the emission inventory estimate for the most recent historical year, detailed down to the county level and with over 30 line items representing mobile sources. At irregular intervals as required for regulatory analysis projects, EMAD creates estimates of emissions for future years. When the method for estimating emissions changes significantly, EMAD usually revises its older estimates of emissions in years prior to the most recent year, to avoid a sudden discontinuity in the apparent emissions trend. EMAD publishes the national emission estimates in hardcopy; county-level estimates are available electronically. Additional information about transportation and air quality related to estimating, testing for, and measuring emissions, as well as research being conducted on technologies for reducing emissions is available at http://www.epa.gov/otaq/research.htm

When major changes are made in the emission models or resulting inventories (and even the cost estimates), the performance measures will be reviewed to determine if they should be updated.

QA/QC Procedures: The emissions inventories are continuously improved.

Data Quality Review: The emissions inventories are reviewed by both internal and external parties, including the states, locals and industries.

Data Limitations: The limitations of the inventory estimates for mobile sources come from limitations in the modeled emission factors (based on emission factor testing and models predicting overall fleet emission factors in g/mile) and also in the estimated vehicle miles traveled for each vehicle class (derived from Department of Transportation data).http://www.epa.gov/otaq/m6.htm. For nonroad emissions, the estimates come from a model using equipment populations, emission factors per hour or unit of work, and an estimate of usage. This nonroad emissions model accounts for over 200 types of nonroad equipment. Any limitations in the input data will carry over into limitations in the emission inventory estimates.

Error Estimate: Additional information about data integrity is available on the Internet: http://www.epa.gov/otaq/m6.htm.

New/Improved Data or Systems: To keep pace with new analysis needs, new modeling approaches, and new data, EPA is currently working on a new modeling system termed the Multi-scale Motor Vehicles and Equipment Emission System (MOVES). This new system will estimate emissions for on road and off road sources, cover a broad range of pollutants, and allow multiple scale analysis, from fine scale analysis to national inventory estimation. When fully implemented, MOVES will serve as the replacement for MOBILE6 and NONROAD. The new system will not necessarily be a single piece of software, but instead will encompass the necessary tools, algorithms, underlying data and guidance necessary for use in all official analyses associated with regulatory development, compliance with statutory requirements, and national/regional inventory projections. Additional information is available on the Internet: http://www.epa.gov/otaq/ngm.htm

References: For additional information about mobile source programs see: http://www.epa.gov/otaq/.

FY 2007 Performance Measures:

- **Combined Stationary and Mobile Source Reductions in Air Toxics Emissions**
- **Mobile Source Air Toxics Emissions Reduced**
- **Stationary Source Air Toxics Emissions Reduced**
- **All Other Air Toxics Emissions Reduced**

Performance Database: National Emissions Inventory (NEI) for Hazardous Air Pollutants (HAPs)

Data Source: To calculate performance measures, the data source used is the NEI for HAPs which includes emissions from large and small industrial sources inventoried as point sources, smaller stationary area and other sources, such as fires inventoried as non-point sources, and mobile sources.

Prior to the 1999 NEI for HAPs, there was the National Toxics Inventory (NTI). The baseline NTI (for base years 1990 - 1993) includes emissions information for 188 hazardous air pollutants from more than 900 stationary sources and from mobile sources. It is based on data collected during the development of Maximum Achievable Control Technology (MACT) standards, state and local data, Toxics Release Inventory (TRI) data, and emissions estimates using accepted emission inventory methodologies. The baseline NTI contains county level emissions data , not facility-specific data.

The 1996 NTI and 1999 NEI for HAPs contain estimates of facility-specific HAP emissions and their source specific parameters such as location (latitude and longitude) and facility characteristics (stack height, exit velocity, temperature, etc.)

The primary source of data in the 1996 and 1999 NTI is state and local air pollution control agencies and Tribes. These data vary in completeness, format, and quality. EPA evaluates these data and supplements them with data gathered while developing MACT and residual risk standards, industry data, and TRI data. To produce a complete national inventory, EPA estimates emissions for approximately 30 non-point source categories such as wildfires and residential heating sources not included in the state, local and Tribal data. Mobile source data are developed using data provided by state and local agencies and Tribes and the most current onroad and nonroad models developed by EPA's Office of Transportation and Air Quality. The draft 1996 NTI and 1999 NEI for HAPS underwent extensive review by state and local agencies, Tribes, industry, EPA, and the public.

For more information and references on the development of the 1996 NTI, please go to the following web site: www.epa.gov/ttn/chief/nti/index.html#nti. For more information and references on the development of the 1999 NEI for HAPs, please go to the following web site: http://www.epa.gov/ttn/chief/net/index.html#1999.

Methods, Assumptions and Suitability: To produce a complete model-ready national inventory, EPA estimates emissions for approximately 30 non-point source categories such as wildfires and residential heating sources not included in the state, local and Tribal data. Mobile source data are developed using data provided by state and local agencies and Tribes and the most current onroad and nonroad models developed by EPA's Office of Transportation and Air Quality.

Upon development of the inventory, the EMS-HAP (Emissions Modeling System for Hazardous Air Pollutants) is used to estimate annual emissions of air toxics for the 1996 NTI and 1999 NEI for HAPS (and for all years in-between). The EMS-HAP can project future emissions, by adjusting stationary source emission data to account for growth and emission reductions resulting from emission reduction scenarios such as the implementation of the Maximum Achievable Control Technology (MACT) standards.

For more information and references on EMS-HAP, please go to the following web sites: http://www.epa.gov/scram001/tt22.htm#aspen and http://www.epa.gov/ttn/chief/emch/projection/emshap.html.
The growth and reduction information used for the projections are further described on the following website: http://www.epa.gov/ttn/chief/emch/projection/emshap.html

QA/QC Procedures: The NTI and the NEI for HAPs are databases designed to house information from other primary sources. The EPA performs extensive quality assurance/quality control (QA/QC) activities, including checking data provided by other organizations, to improve the quality of the emission inventory. Some of these activities include: (1) the use of an automated format QC tool to identify potential errors of data integrity, code values, and range checks; (2) use of geographical information system (GIS) tools to verify facility locations; and (3) automated content analysis by pollutant, source category and facility to identify potential problems with emission estimates such as outliers, duplicate sites, duplicate emissions, coverage of a source category, etc. The content analysis includes a variety of comparative and statistical analyses. The comparative analyses help reviewers prioritize which source categories and pollutants to review in more detail based on comparisons using current inventory data and prior inventories. The statistical analyses help reviewers identify potential outliers by providing the minimum, maximum, average, standard deviation, and selected percentile values based on current data. The EPA is currently developing an automated QC content tool for data providers to use prior to submitting their data to EPA. After investigating errors identified using the automated QC format and GIS tools, the EPA follows specific guidance on augmenting data for missing data fields. This guidance is available at the following web site: http://www.epa.gov/ttn/chief/emch/invent/qaaugmementationmemo_99nei_60603.pdf

The NTI database contains data fields that indicate if a field has been augmented and identifies the augmentation method. After performing the content analysis, the EPA contacts data providers to reconcile potential errors. The draft NTI is posted for external review and includes a README file, with instructions on review of data and submission of revisions, state-by-state modeling files with all modeled data fields, and summary files to assist in the review of the data. One of the summary files includes a comparison of point source data submitted by different organizations. During the external review of the data, state and local agencies, Tribes, and industry provide external QA of the inventory. The EPA evaluates proposed revisions from external reviewers and prepares memos for individual reviewers documenting incorporation of revisions and explanations if revisions were not incorporated. All revisions are tracked in the database with the source of original data and sources of subsequent revision.

The external QA and the internal QC of the inventory have resulted in significant changes in the initial emission estimates, as seen by comparison of the initial draft NEI for HAPs and its final version. For more information on QA/QC of the NEI for HAPs, please refer to the following web site for a paper presented at the 2002 Emission Inventory Conference in Atlanta. “QA/QC - An Integral Step in the Development of the 1999 National Emission Inventory for HAPs,” Anne Pope, et al. www.epa.gov/ttn/chief/conference/ei11/qa/pope.pdf

EPA’s Office of Environmental Information (OEI) has created uniform data standards or elements, which provide “meta” information on the standard NEI Input Format (NIF) fields.

These standards were developed by teams representing states, Tribes, EPA and other Federal agencies. The use of common data standards among partners fosters consistently defined and formatted data elements and sets of data values, and provides public access to more meaningful data. The standards relevant to the NEI for HAPs are the: SIC/NAICS, Latitude/Longitude, Chemical Identification, Facility Identification, Date, Tribal and Contact Data Standards. The 1999 NEI for HAPs is compliant with all new data standards except the Facility Identification Standard because OEI has not completed its assignment of Facility IDs to the 1999 NEI for HAPs facilities.

For more information on compliance of the NEI for HAPs with new OMB Information Quality Guidelines and new EPA data standards, please refer to the following web site for a paper presented at the 2003 Emission Inventory Conference in San Diego: "The Challenge of Meeting New EPA Data Standards and Information Quality Guidelines in the Development of the 2002 NEI Point Source Data for HAPs," Anne Pope, et al.
www.epa.gov/ttn/chief/conference/ei12/dm/pope.pdf

The 2002 NEI for HAPs will undergo scientific peer review in early 2005.

Data Quality Review: EPA staff, state and local agencies, Tribes, industry and the public review the NTI and the NEI for HAPs. To assist in the review of the 1999 NEI for HAPs, the EPA provided a comparison of data from the three data sources (MACT/residual risk data, TRI, and state, local and Tribal inventories) for each facility. For the 1999 NEI for HAPs, two periods were available for external review - October 2001 - February 2002 and October 2002 - March 2003. . The final 1999 NEI was completed and posted on the Agency website in the fall of 2003. Beginning in 2005, the NTI will undergo an external scientific peer review.

In 2001, EPA's Science Advisory Board (SAB) reviewed the EMS-HAP model as part of the 1996 national-scale assessment. The review was generally supportive of the assessment purpose, methods, and presentation; the committee considers this an important step toward a better understanding of air toxics. Additional information is available on the Internet:
www.epa.gov/ttn/atw/nata/peer.html.

Data Limitations: While emissions estimating techniques have improved over the years, broad assumptions about the behavior of sources and serious data limitations still exist. The NTI and the NEI for HAPs contain data from other primary references. Because of the different data sources, not all information in the NTI and the NEI for HAPs has been developed using identical methods. Also, for the same reason, there are likely some geographic areas with more detail and accuracy than others. Because of the lesser level of detail in the baseline NTI, it is currently not suitable for input to dispersion models. For further discussion of the data limitations and the error estimates in the 1999 NEI for HAPs, please refer to the discussion of Information Quality Guidelines in the documentation at:
www.epa.gov/ttn/chief/net/index.html#haps99 .

In 2004, the Office of the Inspector General (OIG) released a final evaluation report on "EPA's Method for Calculating Air Toxics Emissions for Reporting Results Needs Improvement" (report can be found at www.epa.gov/oig/reports/2004/20040331-2004-p-00012.pdf) The report stated

that although the methods used have improved substantially, unvalidated assumptions and other limitations underlying the NTI continue to impact its use as a GPRA performance measure. As a result of this evaluation and the OIG recommendations for improvement, EPA prepared an action plan and is looking at way to improve the accuracy and reliability of the data. EPA will meet bi-annually with OIG to report on its progress in completing the activities as outlined in the action plan.

Error Estimate: Error estimate cannot be tabulated on account of data limitations as described above.

New/Improved Data or Systems: The 1996 NTI and 1999 NEI for HAPs are a significant improvement over the baseline 1993 NTI because of the added facility-level detail (e.g., stack heights, latitude/longitude locations), making it more useful for dispersion model input. Future inventories (2002 and later years) are expected to improve significantly because of increased interest in the NEI for HAPs by regulatory agencies, environmental interests, and industry, and the greater potential for modeling and trend analysis. During the development of the 1999 NEI for HAPs, all primary data submitters and reviewers were required to submit their data and revisions to EPA in a standardized format using the Agency's Central Data Exchange (CDX). For more information on CDX, please go the following web site: www.epa.gov/ttn/chief/nif/cdx.html

References: The NTI and NEI data and documentation are available at the following sites:

ftp site:	ftp://ftp.epa.gov/EmisInventory/
Available inventories:	1996 NTI, 1999 NEI for HAPs
Contents:	Modeling data files for each state
	Summary data files for nation
	Documentation
	README file
Audience:	individuals who want full access to NTI files
NEON:	http://ttnwww.rtpnc.epa.gov/Neon/
Available inventories:	1996 NTI and 1999 NEI for HAPs
Contents:	Summary data files
Audience:	EPA staff
CHIEF:	www.epa.gov/ttn/chief
	1999 NEI for HAPs data development materials
	1999 Data Incorporation Plan - describes how EPA compiled the 1999 NEI for HAPs
	QC tool for data submitters
	Data Augmentation Memo describes procedures EPA will use to augment data
	99 NTI Q's and A's provides answers to frequently asked questions
	NIF (Input Format) files and descriptions

CDX Data Submittal Procedures - instructions on how to submit data using CDX
Training materials on development of HAP emission inventories
Emission factor documents, databases, and models

Audience: State and local agencies, Tribes, industry, EPA, and the public

FY 2007 Performance Measures:

- **Cumulative percentage reduction in tons of toxicity-weighted (for cancer risk) emissions of air toxics (PART measure)**
- **Cumulative percentage reduction in tons of toxicity-weighted (for noncancer risk) emissions of air toxics (PART measure)**

Performance Databases:

- National Emissions Inventory (NEI) for Hazardous Air Pollutants (HAPs)
- EPA's Health Criteria Data for Risk Characterization

Data Source:

To better measure the percentage change in cancer and noncancer risk to the public, a toxicity-weighted emission inventory performance measure has been developed. This measure utilizes data from the NEI for air toxics along with data from EPA's Health Criteria Data for Risk Characterization (found at www.epa.gov/ttn/atw/toxsource/summary.html), which is a compendium of cancer and noncancer health risk criteria used to develop a risk metric. This compendium includes tabulated values for long-term (chronic) inhalation for many of the 188 hazardous air pollutants. These health risk data were obtained from various data sources including EPA, the U.S. Agency for Toxic Substances and Disease Registry, California Environmental Protection Agency, and the International Agency for Research on Cancer. The numbers from the health risk database are used for estimating the risk of contracting cancer and the level of hazard associated with adverse health effects other than cancer.

The NEI for HAPs includes emissions from large and small industrial sources inventoried as point sources, smaller stationary area and other sources, such as fires inventoried as non-point sources, and mobile sources. Prior to 1999 NEI for HAPs, there was the National Toxics Inventory (NTI). The baseline NTI (for base years 1990 - 1993) includes emissions information for 188 hazardous air pollutants from more than 900 stationary sources and from mobile sources. It is based on data collected during the development of Maximum Achievable Control Technology (MACT) standards, state and local data, Toxics Release Inventory (TRI) data, and emissions estimates using accepted emission inventory methodologies. The baseline NTI contains county level emissions data and cannot be used for modeling because it does not contain facility specific data.

The 1996 NTI and the 1999 NEI for HAPs contain stationary and mobile source estimates. These inventories also contain estimates of facility-specific HAP emissions and their source specific parameters such as location (latitude and longitude) and facility characteristics (stack height, exit velocity, temperature, etc.

The primary source of data in the 1996 and 1999 inventories are state and local air pollution control agencies and Tribes. These data vary in completeness, format, and quality. EPA evaluates these data and supplements them with data gathered while developing MACT and residual risk standards, industry data, and TRI data.

For more information and references on the development of the 1996 NTI, please go to the following web site: www.epa.gov/ttn/chief/nti/index.html#nti. For more information and references on the development of the 1999 NEI for HAPs, please go to the following web site: www.epa.gov/ttn/chief/net/index.html#1999.

Methods, Assumptions and Suitability: As the NEI is only developed every three years, EPA utilizes an emissions modeling system to project inventories for "off-years" and to project the inventory into the future. This model, the EMS-HAP (Emissions Modeling System for Hazardous Air Pollutants), can project future emissions, by adjusting stationary source emission data to account for growth and emission reductions resulting from emission reduction scenarios such as the implementation of the Maximum Achievable Control Technology (MACT) standards.

Once the EMS-HAP process has been performed, the EPA would tox-weight the inventory by "weighting" the emissions for each pollutant with the appropriate health risk criteria. This would be accomplished through a multi-step process. Initially, pollutant by pollutant values would be obtained from the NEI for the current year and the baseline year (1990/93). Conversion of actual tons for each pollutant for the current year and the baseline year to "toxicity-weighted" tons would be accomplished by multiplying the appropriate values from the health criteria database such as the unit risk estimate (URE) or lifetime cancer risk (defined at www.epa.gov/ttn/atw/nata/gloss.htm#rfc) to get the noncancer tons. These toxicity-weighted values act as a surrogate for risk and allow EPA to compare the toxicity-weighted values against a 1990/1993 baseline of toxicity-weighted values to determine the percentage reduction in risk on an annual basis

Complete documentation on development of the NEI for HAPs can be found at http://www.epa.gov/ttn/chief/net/index.html. For more information and references on EMS-HAP, go to the following web sites: http://www.epa.gov/scram001/tt22.htm#aspen and http://www.epa.gov/ttn/chief/emch/projection/emshap.html. The growth and reduction information used for the projections are further described at http://www.epa.gov/ttn/chief/emch/projection/emshap.html.

QA/QC Procedures: The NTI and the NEI for HAPs are databases designed to house information from other primary sources. The EPA performs extensive quality assurance/quality control (QA/QC) activities, including checking data provided by other organizations, to improve the quality of the emission inventory. Some of these activities include: (1) the use of an automated format QC tool to identify potential errors of data integrity, code values, and range checks; (2) use of geographical information system (GIS) tools to verify facility locations; and (3) automated content analysis by pollutant, source category and facility to identify potential problems with emission estimates such as outliers, duplicate sites, duplicate emissions, coverage of a source category, etc. The content analysis includes a variety of comparative and statistical

analyses. The comparative analyses help reviewers prioritize which source categories and pollutants to review in more detail based on comparisons using current inventory data and prior inventories. The statistical analyses help reviewers identify potential outliers by providing the minimum, maximum, average, standard deviation, and selected percentile values based on current data. The EPA has developed an automated QC content tool for data providers to use prior to submitting their data to EPA. After investigating errors identified using the automated QC format and GIS tools, the EPA follows specific guidance on augmenting data for missing data fields. This guidance is available at the following web site: http://www.epa.gov/ttn/chief/emch/invent/qaaugmementationmemo_99nei_60603.pdf

The NTI database contains data fields that indicate if a field has been augmented and identifies the augmentation method. After performing the content analysis, the EPA contacts data providers to reconcile potential errors. The draft NTI is posted for external review and includes a README file, with instructions on review of data and submission of revisions, state-by-state modeling files with all modeled data fields, and summary files to assist in the review of the data. One of the summary files includes a comparison of point source data submitted by different organizations. During the external review of the data, state and local agencies, Tribes, and industry provide external QA of the inventory. The EPA evaluates proposed revisions from external reviewers and prepares memos for individual reviewers documenting incorporation of revisions and explanations if revisions were not incorporated. All revisions are tracked in the database with the source of original data and sources of subsequent revision.

The external QA and the internal QC of the inventory have resulted in significant changes in the initial emission estimates, as seen by comparison of the initial draft NEI for HAPs and its final version. For more information on QA/QC of the NEI for HAPs, please refer to the following web site for a paper presented at the 2002 Emission Inventory Conference in Atlanta. “QA/QC - An Integral Step in the Development of the 1999 National Emission Inventory for HAPs”, Anne Pope, et al. www.epa.gov/ttn/chief/conference/ei11/qa/pope.pdf

EPA’s Office of Environmental Information (OEI) has created uniform data standards or elements, which provide “meta” information on the standard NEI Input Format (NIF) fields. These standards were developed by teams representing states, Tribes, EPA and other Federal agencies. The use of common data standards among partners fosters consistently defined and formatted data elements and sets of data values, and provides public access to more meaningful data. The standards relevant to the NEI for HAPs are the: SIC/NAICS, Latitude/Longitude, Chemical Identification, Facility Identification, Date, Tribal and Contact Data Standards. The 1999 NEI for HAPs is compliant with all new data standards except the Facility Identification Standard because OEI has not completed its assignment of Facility IDs to the 1999 NEI for HAPs facilities.

For more information on compliance of the NEI for HAPs with new OMB Information Quality Guidelines and new EPA data standards, please refer to the following web site for a paper presented at the 2003 Emission Inventory Conference in San Diego. “The Challenge of Meeting New EPA Data Standards and Information Quality Guidelines in the Development of the 2002 NEI Point Source Data for HAPs”, Anne Pope, et al.

www.epa.gov/ttn/chief/conference/ei12/dm/pope.pdf The 2002 NEI for HAPs will undergo scientific peer review in early 2005.

The tables used in the EPA's Health Criteria Data for Risk Characterization (found at www.epa.gov/ttn/atw/toxsource/summary.html) are compiled assessments from various sources for many of the 188 substances listed as hazardous air pollutants under the Clean Air Act of 1990. Because different sources developed these assessments at different times for purposes that were similar but not identical, results are not totally consistent. To resolve these discrepancies and ensure the validity of the data, EPA applied a consistent priority scheme consistent with EPA risk assessment guidelines and various levels of scientific peer review. These risk assessment guidelines can be found at http://www.epa.gov/ncea/raf/car2sab/preamble.pdf .

Data Quality Review: EPA staff, state and local agencies, Tribes, industry and the public review the NTI and the NEI for HAPs. To assist in the review of the 1999 NEI for HAPs, the EPA provided a comparison of data from the three data sources (MACT/residual risk data, TRI, and state, local and Tribal inventories) for each facility. For the 1999 NEI for HAPs, two periods were available for external review - October 2001 - February 2002 and October 2002 - March 2003. The final 1999 NEI was completed and posted on the Agency website in the fall of 2003. Beginning in 2005, the NTI will undergo an external scientific peer review.

The EMS-HAP has been subjected to the scrutiny of leading scientists throughout the country in a process called "scientific peer review". This ensures that EPA uses the best available scientific methods and information. In 2001, EPA's Science Advisory Board (SAB) reviewed the EMS-HAP model as part of the 1996 national-scale assessment. The review was generally supportive of the assessment purpose, methods, and presentation; the committee considers this an important step toward a better understanding of air toxics. Additional information is available on the Internet: www.epa.gov/ttn/atw/nata/peer.html.

The data compiled in the Health Criteria Data for Risk Characterization (found at www.epa.gov/ttn/atw/toxsource/summary.html) are reviewed to make sure they support hazard identification and dose-response assessment for chronic exposures as defined in the National Academy of Sciences (NAS) risk assessment paradigm (www.epa.gov/ttn/atw/toxsource/paradigm.html). Because the health criteria data were obtained from various sources they are prioritized for use (in developing the performance measure, for example) according to 1) conceptual consistency with EPA risk assessment guidelines and 2) various levels of scientific peer review. The prioritization process is aimed at incorporating the best available scientific data.

Data Limitations and Error Estimates: While emissions estimating techniques have improved over the years, broad assumptions about the behavior of sources and serious data limitations still exist. The NTI and the NEI for HAPs contain data from other primary references. Because of the different data sources, not all information in the NTI and the NEI for HAPs has been developed using identical methods. Also, for the same reason, there are likely some geographic areas with more detail and accuracy than others. Because of the lesser level of detail in the baseline NTI, it is currently not suitable for input to dispersion models. For further discussion of

the data limitations and the error estimates in the 1999 NEI for HAPs, please refer to the discussion of Information Quality Guidelines in the documentation at: www.epa.gov/ttn/chief/net/index.html#haps99 .

In 2004, the Office of the Inspector General (OIG) released a final evaluation report on "EPA's Method for Calculating Air Toxics Emissions for Reporting Results Needs Improvement" (report can be found at www.epa.gov/oig/reports/2004/20040331-2004-p-00012.pdf). The report stated that although the methods used have improved substantially, unvalidated assumptions and other limitations underlying the NTI continue to impact its use as a GPRA performance measure. As a result of this evaluation and the OIG recommendations for improvement, EPA prepared an action plan and is looking at ways to improve the accuracy and reliability of the data. EPA will meet bi-annually with OIG to report on its progress in completing the activities as outlined in the action plan.

While the Agency has made every effort to utilize the best available science in selecting appropriate health criteria data for toxicity-weighting calculations there are inherent limitations and errors (uncertainties) associated with this type of data. While it is not practical to expose humans to chemicals at target doses and observe subsequent health implications over long periods of time, most of the agencies health criteria is derived from response models and laboratory experiments involving animals. The parameter used to convert from exposure to cancer risk (i.e. the Unit Risk Estimate or URE) is based on default science policy processes used routinely in EPA assessments. First, some air toxics are known to be carcinogens in animals but lack data in humans. These have been assumed to be human carcinogens. Second, all the air toxics in this assessment were assumed to have linear relationships between exposure and the probability of cancer (i.e. effects at low exposures were extrapolated from higher, measurable, exposures by a straight line). Third, the URE used for some air toxics compounds represents a maximum likelihood estimate, which might be taken to mean the best scientific estimate. For other air toxics compounds, however, the URE used was an "upper bound" estimate, meaning that it probably leads to an overestimation of risk if it is incorrect. For these upper bound estimates, it is assumed that the URE continues to apply even at low exposures. It is likely, therefore, that this linear model over-predicts the risk at exposures encountered in the environment. The cancer weighting-values for this approach should be considered "upper bound" in the science policy sense.

All of the noncancer risk estimates have a built-in margin of safety. All of the Reference Concentrations (RfCs) used in toxicity-weighting of noncancer are conservative, meaning that they represent exposures which probably do not result in any health effects, with a margin of safety built into the RfC to account for sources of uncertainty and variability. Like the URE used in cancer weighting the values are, therefore, considered "upper bound" in the science policy sense. Further details on limitations and uncertainties associated with the agencies health data can be found at: www.epa.gov/ttn/atw/nata/roy/page9.html#L10

New/Improved Data or Systems: The 1996 NTI and 1999 NEI for HAPs are a significant improvement over the baseline NTI because of the added facility-level detail (e.g., stack heights, latitude/longitude locations), making it more useful for dispersion model input. Future inventories (2002 and later years) are expected to improve significantly because of increased

interest in the NEI for HAPs by regulatory agencies, environmental interests, and industry, and the greater potential for modeling and trend analysis. During the development of the 1999 NEI for HAPs, all primary data submitters and reviewers were required to submit their data and revisions to EPA in a standardized format using the Agency's Central Data Exchange (CDX). For more information on CDX, please go the following web site: www.epa.gov/ttn/chief/nif/cdx.html

Beginning in 2006, the toxicity-weighted emission inventory data will also be used as a measurement to predict exposure and risk to the public. This measure will utilize ambient monitoring of air toxics as a surrogate for population exposure and compare these values with health benchmarks to predict risks.

References:

The NTI and NEI data and documentation are available at the following sites:

Emissions Inventory Data:	ftp://ftp.epa.gov/EmisInventory/
Available inventories:	1996 NTI, 1999 NEI for HAPs
Contents:	Modeling data files for each state Summary data files for nation Documentation README file
Audience:	individuals who want full access to NTI files
NEON:	http://ttnwww.rtpnc.epa.gov/Neon/
Available inventories:	1996 NTI and 1999 NEI for HAPs
Contents:	Summary data files
Audience:	EPA staff
CHIEF:	www.epa.gov/ttn/chief 1999 NEI for HAPs data development materials 1999 Data Incorporation Plan - describes how EPA compiled the 1999 NEI for HAPs QC tool for data submitters Data Augmentation Memo describes procedures EPA will use to augment data 99 NTI Q's and A's provides answers to frequently asked questions NIF (Input Format) files and descriptions CDX Data Submittal Procedures - instructions on how to submit data using CDX Training materials on development of HAP emission inventories Emission factor documents, databases, and models
Audience:	State/local/Tribal agencies, industry, EPA, and the public

Information on the Emissions Modeling System for Hazardous Air Pollutants:

EMS-HAP:	http://epa.gov/scram001/tt22.htm#aspen http://www.epa.gov/ttn/chief/emch/projection/emshap.html
Contents:	1996 NTI and 1999 NEI for HAPs
Audience:	public

Information on EPA's Health Criteria Data for Risk Characterization:

Health Criteria Data:	http://www.epa.gov/ttn/atw/toxsource/summary.html
Contents:	Tabulated dose response values for long-term (chronic) inhalation and oral exposures; and values for short-term (acute) inhalation exposure
Audience:	public

GOAL 1 OBJECTIVE 2

FY 2007 *Overarching* Performance Measure:

- **People Living in Healthier Indoor Air**

FY 2007 Performance Measures:

- **People Living in Radon Resistant Homes**
- **Annual additional homes with radon reducing features (PART measure)**

Performance Database: Annual industry survey data of home builders provided by the National Association of Home Builders.

Data Source: The survey is an annual sample of home builders in the United States most of whom are members of the National Association of Home Builders (NAHB). NAHB members construct 80% of the homes built in the United States each year. Using a survey methodology reviewed by EPA, NAHB Research Center estimates the percentage of these homes that are built radon resistant. The percentage built radon resistant from the sample is then used to estimate what percent of all homes built nationwide are radon resistant**.** To calculate the number of people living in radon resistant homes, EPA assumes an average of 2.67 people per household. NAHB Research Center has been conducting this annual builder practices survey for over a decade, and has developed substantial expertise in the survey's design, implementation, and analysis. The statistical estimates are typically reported with a 95 percent confidence interval.

Methods, Assumptions, and Suitability: NAHB Research Center conducts an annual survey of home builders in the United States to assess a wide range of builder practices. NAHB Research Center voluntarily conducts this survey to maintain an awareness of industry trends in order to improve American housing and to be responsive to the needs of the home building industry. The annual survey gathers information such as types of houses built, lot sizes, foundation designs, types of lumber used, types of doors and windows used, etc. The NAHB Research Center Builder Survey also gathers information on the use of radon-resistant design features in new houses, and these questions comprise about two percent of the survey questionnaire.

In January of each year, the survey of building practices for the preceding calendar year is typically mailed out to home builders. For the most-recently completed survey, for building practices during calendar year 2003, NAHB Research Center reported mailing the survey to about 45,000 active United States home building companies, and received about 2,300 responses, which translates to a response rate of about 5 percent. The survey responses are analyzed, with respect to State market areas and Census Divisions in the United States, to assess the percentage and number of homes built each year that incorporate radon-reducing features. The data are also used to assess the percentage and number of homes built with radon-reducing features in high radon potential areas in the United States (high risk areas). Other analyses include radon-reducing features as a function of housing type, foundation type, and different techniques for radon-resistant new home construction. The data are suitable for year-to-year comparisons.

QA/QC Procedures: Because data are obtained from an external organization, QA/QC procedures are not entirely known. According to NAHB Research Center, QA/QC procedures have been established, which includes QA/QC by the vendor that is utilized for key entry of data.

Data Quality Review: Because data are obtained from an external organization, Data Quality Review procedures are not entirely known. NAHB Research Center indicates that each survey is manually reviewed, a process that requires several months to complete. The review includes data quality checks to ensure that the respondents understood the survey questions and answered the questions appropriately. NAHB Research Center also applies checks for open-ended questions to verify the appropriateness of the answers. In some cases, where open-ended questions request numerical information, the data are capped between the upper and lower three percent of the values provided in the survey responses. Also, a quality review of each year's draft report from NAHB Research Center is conducted by the EPA project officer.

Data Limitations: The majority of home builders surveyed are NAHB members. The NAHB Research Center survey also attempts to capture the activities of builders that are not members of NAHB. Home builders that are not members of NAHB are typically smaller, sporadic builders that in some cases build homes as a secondary profession. To augment the list of NAHB members in the survey sample, NAHB Research Center sends the survey to home builders identified from mailing lists of builder trade publications, such as Professional Builder magazine. There is some uncertainty as to whether the survey adequately characterizes the practices of builders who are not members of NAHB. The effects on the findings are not known.

Although an overall response rate of 5 percent could be considered low, it is the response rate for the entire survey, of which the radon-resistant new construction questions are only a very small portion. Builders responding to the survey would not be doing so principally due to their radon activities. Thus, a low response rate does not necessarily indicate a strong potential for a positive bias under the speculation that builders using radon-resistant construction would be more likely to respond to the survey. NAHB Research Center also makes efforts to reduce the potential for positive bias in the way the radon-related survey questions are presented.

Error Estimate: See Data Limitations

New/Improved Data or Systems: None

References: The results are published by the NAHB Research Center in annual reports of radon-resistant home building practices. See http://www.nahbrc.org/ last accessed 12/21/2005 for more information about NAHB. The most recent report, "Builder Practices Report: Radon Reducing Features in New Construction 2003,"Annual Builder and Consumer Practices Surveys by the NAHB Research Center, Inc., November, 2004. Similar report titles exist for prior years.

FY 2007 Performance Measure:

- **People Living in Radon Mitigated Homes**

Performance Database: External

Data Source: Radon fan manufacturers report fan sales to the Agency. EPA assumes one fan per radon mitigated home, assumes a fan life of 10 years, and then multiplies the assumed number of working fans by the assumed average of 2.67 people per household.

Methods, Assumptions and Suitability: N/A.

QA/QC Procedures: Because data are obtained from an external organization, EPA relies on the business practices for reporting data of the radon fan manufacturers.

Data Quality Review: Data are obtained from an external organization. EPA reviews the data to ascertain their reliability and discusses any irregularities with the relevant manufacturer.

Data Limitations: Reporting by radon fan manufacturers is voluntary and may underestimate the number of radon fans sold. Nevertheless, these are the best available data to determine the number of homes mitigated. There are other methods to mitigate radon including: passive mitigation techniques of sealing holes and cracks in floors and foundation walls, installing sealed covers over sump pits, installing one-way drain valves in untrapped drains, and installing static venting and ground covers in areas like crawl spaces. Because there are no data on the occurrence of these methods, there is again the possibility that the number of radon mitigated homes has been underestimated.

No radon vent fan manufacturer, vent fan motor maker or distributor is required to report to EPA; they provide data/information voluntarily to EPA. There are only four (4) radon vent fan manufacturers of any significance; one of these accounts for an estimated 70% of the market. Radon vent fans are unlikely to be used for non-radon applications. However, vent fans typically used for non-radon applications are perhaps being installed as substitutes for radon vent fans in some instances; estimated to be less than 1% of the total market. Ascertaining the actual number of radon vent fans used for other applications, and the number of non-radon fans being substituted in radon applications, would be difficult and expensive at this time relative to the benefit of having such data.

Error Estimate: N/A.

New/Improved Data or Systems: None

References: See http://www.epa.gov/iaq/radon/pubs/index.html last accessed 12/21/2005 for National performance/progress reporting (National Radon Results: 1985 to 2003*) on radon, measurement, mitigation and radon-resistant new construction. Data through 2004 are available from the Indoor Environments Division of the Office of Air and Radiation.

FY 2007 Performance Measures:

- **Number of people with asthma who have taken steps to reduce their exposure to indoor environmental asthma triggers (PART measure)**

Performance Database: The national telephone survey (*National Survey on Environmental Management of Asthma and Children's Exposure to ETS*) seeks information about the measures taken by people with asthma, and parents of children with asthma to minimize exposure to indoor environmental asthma triggers. Additional information about asthma morbidity and mortality in the US is obtained from the Centers for Disease Control and Prevention (CDC). Annual expenditures for health and lost productivity due to asthma are obtained from the National Heart Lung and Blood Institute (NHLBI) Chartbook www.nhlbi.nih.gov/resources/docs/02_chtbk.pdf last accessed 12/21/2005.

EPA also collects data on children exposed to environmental tobacco smoke in the home. This information is used in supporting the asthma goals of the program. EPA focuses its work on ETS on children in low income and minority populations, and on children with asthma. The *National Survey on Environmental Management of Asthma and Children's Exposure to ETS*, which includes a series of questions about whether respondents allow smoking in their home, whether young children are in the home, what resident family members smoke and how often, and how much visitors contribute to exposure, is used to track progress toward reducing childhood ETS exposure. Information about ETS is obtained periodically from the Centers for Disease Control and Prevention (CDC) including the National Health Interview, the National Health and Nutrition Examination Survey (for cotinine data), and the Behavioral Risk Factor Surveillance Survey (for state tobacco/ETS exposure data).

Data Source: The *National Survey on Environmental Management of Asthma and Children's Exposure to ETS* (OMB control number 2060-0490) source is EPA. Data on asthma morbidity and mortality is available from the National Center for Health Statistics at the CDC (www.cdc.gov/nchs last accessed 12/21/2005). Data on annual expenditures for health and lost productivity due to asthma are obtained from the NHLBI Chartbook.

Methods, Assumptions and Suitability: End-of–year performance for the asthma program is a best professional estimate using all data sources (including annual measures on partner performance and advertising awareness outlined below). The survey provides statistically sound results every three years for one period of time; Scheduled surveys will provide performance results for years 2006 and 2009. The estimate of the number of people with asthma who have taken steps to reduce their exposure to indoor environmental asthma triggers as of 2007 will be

based on a projection from previous surveys, and this estimate will be verified using the 2009 survey data. Data on annual measures is also used to support progress towards the long term performance measure.

National Survey on Environmental Management of Asthma and Children's Exposure to ETS (OMB control number 2060-0490): This survey is the most robust data set for this performance measure, but it is not administered annually. The first survey, administered in 2003, was designed in consultation with staff from EPA and the CDC National Center for Health Statistics (NCHS) to ensure that respondents will understand the questions asked and will provide the type of data necessary to measure the Agency's objectives. In addition, care has been taken to ensure that the survey questions target the population with asthma by using the same qualifier question that appears on other national surveys on asthma collected by the CDC.

From an initial sampling frame of 124,994 phone numbers, 14,685 households were contacted successfully and agreed to participate in the screening survey. Of the 14,685 individuals screened, approximately 18 percent, or 2,637 individuals, either have asthma or live with someone who does. Only those individuals who have asthma or live with someone who does were considered to be eligible respondents.

Respondents were asked to provide primarily yes/no responses. In some cases, respondents were given a range of responses in the form of multiple choice questions and were asked to indicate the one which best defined their response. The survey seeks information on those environmental management measures that the Agency considers important in reducing an individual's exposure to known indoor environmental asthma triggers. By using yes/no and multiple choice questions, the Agency has substantially reduced the amount of time necessary for the respondent to complete the survey and has ensured consistency in data response and interpretation.

The information collected has been used to establish a baseline to reflect the characteristics of our nation's asthma population and future iterations of this survey will measure additional progress toward achieving performance goals. The next survey will take place in 2006.

QA/QC Procedures: The National Survey is designed in accordance with approved Agency procedures. Additional information is available on the Internet: http://www.epa.gov/icr/players.html last accessed 12/21/2005. The computer assisted telephone interview methodology used for this survey helps to limit errors in data collection. In addition, the QA/QC procedures associated with conducting the survey include pilot testing of interview questions, interviewer training to ensure consistent gathering of information, and random data review to reduce the possibility of data entry error.

Data Quality Review: EPA reviews the data from all sources to ascertain reliability.

Data Limitations: Asthma: Random digit dialing methodology is used to ensure that a representative sample of households has been contacted; however, the survey is subject to inherent limitations of voluntary telephone surveys of representative samples. For example, 1) survey is limited to those households with current telephone service; 2) interviewers may follow survey directions inconsistently. An interviewer might ask the questions incorrectly or inadvertently lead the interviewee to a response; or 3) the interviewer may call at an

inconvenient time (i.e., the respondent might not want to be interrupted at the time of the call and may resent the intrusion of the phone call; the answers will reflect this attitude.).

ETS: Currently available cotinine (a chemical in environmental tobacco smoke) survey data do not address 50% of the age specific portion of EPA's target population. It does not include birth to three years old, the portion of children most susceptible to the effects of ETS.

Error Estimate: In its first data collection with this instrument, the Agency achieved results within the following percentage points of the true value at the 95 percent confidence level (survey instrument):

Adult Asthmatics	plus or minus	2.4%
Child Asthmatics	plus or minus	3.7%
Low Income Adult Asthmatics	plus or minus	6.1%

These precision rates are sufficient to characterize the extent to which the results measured by the survey accurately reflect the characteristics of our nation's asthmatic population.

New/Improved Data or Systems: Data from the *National Survey on Environmental Management of Asthma and Children's Exposure to ETS* (OMB control number 2060-0490) were collected from August 4-September 17, 2003 and represent the first data collection with this instrument.

References:

Asthma

National Center for Health Statistics, Centers for Disease Control and Prevention (www.cdc.gov/nchs/ last accessed 7/27/2005)

EPA Indoor Environments Division (www.epa.gov/iaq/ last accessed 12/21/2005)

ETS

National Health Interview Survey and National Health and Nutrition Examination Survey are part of the National Center for Health Statistics, Centers for Disease Control and Prevention (http://www.cdc.gov/nchs last accessed 12/21/2005)

Behavioral Risk Factor Surveillance Survey, Centers for Disease Control and Prevention (http://www.cdc.gov/brfss/index.htm last accessed 12/21/2005),

US Surgeon General's report on tobacco (http://www.cdc.gov/tobacco/sgr/index.htm/ last accessed 7/27/2005),
National Cancer Institute's (NCI) *Tobacco Monograph Series* (http://cancercontrol.cancer.gov/tcrb/monographs/ last accessed 12/21/2005),

NCI funded *Tobacco Use Supplement* portion of the US Census Bureau's *Current Population Survey* (http://riskfactor.cancer.gov/studies/tus-cps/ last accessed 12/21/2005),

Healthy People 2010 (http://www.healthypeople.gov/ last accessed 12/21/2005).

FY 2007 Performance Measures:

- **Additional health care professionals trained annually by EPA and its partners on the environmental management of asthma triggers (PART measure)**

Performance Database: The performance database consists of quarterly Partner status reports used to document the outcomes of individual projects.

Data Source: Partner status reports are generated by those organizations receiving funding from EPA and are maintained by individual EPA Project Officers.

Methods, Assumptions and Suitability: On an annual basis, EPA requires (programmatic terms and conditions of the award) all funded organizations to provide reports identifying how many health care professionals are educated about indoor asthma triggers.

QA/QC Procedures: It is assumed that organizations report data as accurately and completely as possible; site-visits are conducted by EPA project officers.

Data Quality Review: Project officers review data quality.

Data Limitations: N/A

New/Improved Data or Systems: EPA is exploring the development of a centralized data base.

References: N/A

FY 2007 Performance Measures:

- **Percent of public that is aware of the asthma program's media campaign (PART measure)**

Performance Database: A media tracking study used to assess behavior change within that sector of the public viewing the public service announcements.

Data Source: An independent initiative of the Advertising Council provides media tracking of outcomes of all their public service campaigns and this is publicly available information.

Methods, Assumptions and Suitability: Methods are those of the Advertising Council, and not controlled by EPA.

QA/QC Procedures: Methods are those of the Advertising Council, and not controlled by EPA.

Data Quality Review: Methods are those of the Advertising Council, and not controlled by EPA.

Data Limitations: Methods are those of the Advertising Council, and not controlled by EPA.

New/Improved Data or Systems: Methods are those of the Advertising Council, and not controlled by EPA.

References: Advertising Council Reporting. EPA Assistance Agreement number X-82820301. For additional information see the Ad Council web site http://www.adcouncil.org/ last accessed 12/21/05.

FY 2007 Performance Measures:

- **Students, faculty and staff experiencing improved indoor air quality in their schools**
- **Estimated annual number of schools establishing Indoor Air Quality programs based on EPA's Tools for Schools guidance (PART measure)**

Performance Database:

EPA collects national data by conducting a survey of indoor air quality management practices in schools approximately every three years. The first survey was administered in 2002. EPA is partnering with CDC to incorporate IAQ management practice indicators, consistent with the benchmark survey, into the School Health Policies and Programs Study (SHPPS) to be administered in 2006. EPA will implement this IAQ module as a smaller survey in 2009, as the SHPSS survey is only conducted at 6 year intervals.

To measure annual progress, EPA estimates the number of schools who establish IAQ Tools for Schools (TfS) programs each year from reports from partner organizations and regional recruiters, supplemented by tracking the volume of guidances distributed and number of people trained by EPA and its partners. EPA also collects information on program benefits such as reduced school nurse visits, improved workplace satisfaction among staff, reduced absenteeism, and cost savings experienced by schools.

Data Source: The sources of the data include cooperative partners, USEPA and the statistical sample of all the public and private schools in the nation during the 1999 – 2000 school year (118,000); data are from the United States Department of Education National Center for Education Statistics.

Methods, Assumptions and Suitability: Calculations for the number of people experiencing improved IAQ are based upon an average 525 students, staff and faculty per school (data are from the United States Department of Education National Center for Education Statistics). That number, along with the number of schools that are adopting/implementing TfS, are used to estimate the performance result.

End-of–year performance is a best professional estimate using all data sources. The survey provides more statistically sound results for one period of time; the next scheduled survey will provide performance results for year 2006. EPA's 2006 survey will be included as part of CDC's 2006 School Health Policies and Programs Study, which is conducted every six years.

QA/QC Procedures: It is assumed that partner organizations report data as accurately and completely as possible; site visits and regular communication with grantees are conducted by EPA projects officers.

Data Quality Review: EPA reviews the data from all sources in the performance database to ascertain reliability and to resolve any discrepancies.

Data Limitations: The primary limitation associated with Cooperative Agreement Partner status reporting is the error introduced as a result of self-reporting.

Error Estimate: Not relevant for this year.

New/Improved Data or Systems: Prior to the 2002 survey, EPA tracked the number of schools receiving the TfS guidance and estimated the population of the school to determine the number of students/staff experiencing improved indoor air quality. The survey was administered to establish a baseline for schools implementing IAQ management practices. EPA queried a statistically representative sample of schools to estimate the number of schools that have actually adopted and implemented good IAQ management practices consistent with the TfS guidance. EPA plans to re-administer the survey as a component of CDC's School Health Policies and Programs Study, which will show progress from the baseline.

References: See the United States Department of Education National Center for Education Statistics, http://nces.ed.gov/ last accessed 12/21/2005. See also Indoor Air Quality Tools for Schools Kit (402-K-95-001) at http://www.epa.gov/iaq/schools last accessed 12/21/2005 and see www.cdc.gov/nccdphp/dash/shpps/ *For additional information about the* School Health Policies and Programs Study (SHPPS), a national survey periodically conducted to assess school health policies and programs at the state, district, school, and classroom levels.

GOAL 1 OBJECTIVE 3

FY 2007 Performance Measures:

- **Remaining US consumption of HCFCs, measured in tons of ozone depleting potential (ODP) (PART measure)**
- **Restrict Domestic Exempted Production and Import of Newly Produced Class I CFCs and Halons**

Performance Database: The Allowance Tracking System (ATS) database is maintained by the Stratospheric Protection Division (SPD). ATS is used to compile and analyze quarterly

information on U.S. production, imports, exports, transformations, and allowance trades of ozone-depleting substances (ODS).

Data Source: Progress on restricting domestic exempted consumption of Class II HCFCs is tracked by monitoring industry reports of compliance with EPA's phase-out regulations. Data are provided by U.S. companies producing, importing, and exporting ODS. Corporate data are typically submitted as quarterly reports. Specific requirements as outlined in the Clean Air Act are available on the Internet at: http://www.epa.gov/oar/caa/caa603.txt. Monthly information on domestic production, imports, and exports from the International Trade Commission is maintained in the ATS.

Methods, Assumptions and Suitability: Data are aggregated across all U.S. companies for each individual ODS to analyze U.S. total consumption and production.

QA/QC Procedures: Reporting and record-keeping requirements are published in 40 CFR Part 82, Subpart A, Sections 82.9 through 82.13. These sections of the Stratospheric Ozone Protection Rule specify the required data and accompanying documentation that companies must submit or maintain on-site to demonstrate their compliance with the regulation.

The ATS data are subject to a Quality Assurance Plan (Quality Assurance Plan, USEPA Office of Atmospheric Programs, July 2002). In addition, the data are subject to an annual quality assurance review, coordinated by Office of Air and Radiation (OAR) staff separate from those on the team normally responsible for data collection and maintenance. The ATS is programmed to ensure consistency of the data elements reported by companies. The tracking system flags inconsistent data for review and resolution by the tracking system manager. This information is then cross-checked with compliance data submitted by reporting companies. SPD maintains a user's manual for the ATS that specifies the standard operating procedures for data entry and data analysis. Regional inspectors perform inspections and audits on-site at the producers', importers', and exporters' facilities. These audits verify the accuracy of compliance data submitted to EPA through examination of company records.

Data Quality Reviews: The Government Accounting Office (GAO) completed a review of U.S. participation in five international environmental agreements, and analyzed data submissions from the U.S. under the Montreal Protocol on Substances the Deplete the Ozone Layer. No deficiencies were identified in their January 2003 report.

Data Limitations: None, since companies are required by the Clean Air Act to report data. EPA's regulations specify a quarterly reporting system.

Error Estimate: None.

New/Improved Data or Systems: The Stratospheric Protection Division is developing a system to allow direct electronic reporting.

References: See http://www.epa.gov/ozone/desc.html for additional information on ODSs. See http://www.unep.ch/ozone/montreal.shtml for additional information about the Montreal

Protocol. See http://www.unmfs.org/ for more information about the Multilateral Fund. Quality Assurance Plan, USEPA Office of Atmospheric Programs, July 2002

FY 2007 Performance Measure:

- **Cumulative federal dollars spent per cumulative number of schools joining the SunWise program**

Performance Database: Not applicable

Data Source: Cumulative federal dollars spent is estimated from annual program budget tracking documents. The number of schools joining the SunWise program is measured by counting the number of schools that register to join the SunWise program in each year, which is collected at http://www.epa.gov/sunwise/becoming.html. Schools also have the option of sending in a paper registration, which EPA then enters at this website. EPA tracks the data at http://intranet.epa.gov/sunwise/track/trac_teacher.html.

Methods, Assumptions and Suitability: The cumulative number of schools joining the SunWise program is measured by counting the number of schools that register to join the SunWise program in each year, which is collected at http://www.epa.gov/sunwise/becoming.html., and adding the incremental number of schools joining the program to the prior year's cumulative total. The efficiency measure is calculated by dividing the cumulative number of dollars EPA has spent on the SunWise program by the cumulative number of schools that have joined the program.

QA/QC Procedures: All registrations by schools are reviewed by EPA staff for completeness and to assure there is no double counting of entries. EPA updates the registration information during the course of program implementation.

Data Quality Reviews: Each year researchers at an independent contractor contact a statistical sample of schools in the program database in order to evaluate the effectiveness of the program. EPA updates the website based on the contractor's findings as appropriate.

Data Limitations: The number of participating schools is probably underestimated since schools that fail to provide full registration information are not entered into the database, even if they participate in the program. Note that additional organizations besides schools may also register and provide the SunWise curriculum. These organizations include scout troupes, camps, and 4-H groups, for example. Therefore, counting only schools underestimates the program's reach and efficiency.

Error Estimate: None

New/Improved Data or Systems: N/A

References:
For more information about the SunWise School program, see:

http://www.epa.gov/sunwise/ and
http://www.epa.gov/sunwise/becoming.html Data collection regarding schools that participate in SunWise is authorized by OMB Control No. 2060-0439.

GOAL 1 OBJECTIVE 4

FY 2007 Performance Measure:

- **Purchase and Deploy State-of-Art Monitoring Units**

Performance Data: Data from the near real-time gamma component of the RadNet, formerly known as the Environmental Radiation Ambient Monitoring System (ERAMS), will be stored in an internal EPA database at the National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama. Data from filters are housed in the Laboratory Information Management System (LIMS) which are physically located in Montgomery, Alabama.

Data Source: RadNet

Methods, Assumptions and Suitability: Assuming that funding is continued in future years and the project receives all necessary approvals, the existing air sampling equipment will be supplemented with state-of-the art air monitors that include near real-time gamma radiation detection capability. Addition of detectors and communication systems will provide information about significant radioactive contamination events to decision- makers within hours

QA/QC Procedures: Quality Assurance and Quality Control Procedures will follow the Agency guidelines and be consistent with a specific initial operational Quality Assurance Plan that will be completed. All monitoring equipment will be periodically calibrated with reliable standards and routinely checked for accuracy with onsite testing devices. Laboratory analyses of air filters and other environmental media are closely controlled in compliance with the NAREL Quality Management Plan and applicable Standard Operating Procedures.

Data Quality Reviews: The database will screen all incoming data from the monitoring systems for abnormalities as an indicator of either a contamination event or an instrument malfunction. Data will be held in a secure portion of the database until verified by trained personnel. Copies of quality assurance and quality control testing will also be maintained to assure the quality of the data.

Data Limitations: Data are limited in near-real-time to gamma emitting radionuclide identification and quantification. Radiation levels from gamma-emitting nuclides that will be so low as to be "undetectable" will be significantly below health concerns that require immediate action. Lower levels of radioactive materials in the samples will be measured through laboratory-based analyses and data.

Error Estimate: The overall error in detection capability is estimated to be within 50% of the actual concentration based on previous experience with similar measurement systems. An error analysis will be performed on the prototype systems during the process of detector selection.

New/Improved Performance Data or Systems: New air samplers will maintain steady flow rates that are measured during operation and corrected for varying environmental conditions. Addition of gamma spectrometric detectors and computer-based multi-channel analyzers to the air samplers provide near real-time analyses of radioactive content in particles captured by the filter. In addition to data collection, the onboard computer systems can communicate results of analyses back to a central database and even identify abnormal conditions that might require action. These improvements not only include higher quality data, but also will provide information regarding contamination events to decision-makers within hours instead of days. The number and location of monitoring sites will be improved to provide greater coverage of more of the nation's population.

The plan for upgrading and expanding the RadNet air monitoring network was reviewed in FY05 by an EPA Technical Evaluation Panel (TEP) and will be reviewed in FY06 by the Radiation Advisory Committee (RAC) of EPA's Science Advisory Board (SAB) . The TEP review provided a number of comments that were incorporated in the RadNet plan, especially those addressing the refinement of the overall system objectives. The SAB review is expected to provide discussion and guidance from a team of national experts that will address key aspects of the science and technology of the new network, including fundamental concerns such as the appropriateness and potential effectiveness of the plan for siting near-real-time air monitors across the nation.

References: For additional information about the continuous monitoring system, ERAMS see: http://www.epa.gov/narel/radnet last accessed 7/27/2005.

NAREL Quality Management Plan, Revision 1, March 15, 2001.

FY 2007 Performance Measure:

- **Percentage of EPA RERT members that meet criteria**

Performance Data: To determine the effectiveness of RERT performance, an output measure has been developed that scores RERT members on a scale of one (1) to 100 against criteria developed based on the RERT's responsibilities under the National Response Plan's Nuclear/Radiological Incident Annex (formerly the Federal Radiological Emergency Response Plan) and the National Oil and Hazardous Substances Pollution Contingency Plan (the NCP). A baseline evaluation was performed in FY03, based on the effectiveness of the RERT in responses to actual incidents and a major national exercise (TOPOFF2). RERT members were evaluated in their ability to: (1) provide effective field response, (2) support coordination centers, and (3) provide analytical capabilities and to support a single small-to-medium scale incident, as needed. Overall RERT effectiveness in this baseline analysis was measured at approximately 13 percent. In FY 2004, RERT members were re-evaluated, through a major exercise, in the ability factors listed above. In FY 2005, the evaluation criteria have been reevaluated and revised in response to the results of the FY 2004 exercise as well as changes necessitated by the Homeland Security Act of 2002 and DHS' issuance of the National Incident Management System (NIMS) and the National Response Plan.

Data Source: Based on the requirements of EPA set forth in the NRP's Nuclear/Radiological Incident Annex and the NCP, EPA has developed criteria against which the capabilities of the RERT are judged. This evaluation has been performed by members of the Radiation Protection Division, including representatives both within and outside the RERT itself.

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: The evaluation criteria were modified between FY2003 and FY2005 to reflect the changing requirements of the RERT, based on DHS' issuance of both NIMS and the NRP during this time period. While the broad outline of the RERT's role has remained the same, additional requirements have been imposed by the issuance of these documents, which are now reflected in the RERT evaluation criteria.

Error Estimate: N/A

New/Improved Data or Systems: None

References: The Homeland Security Act of 2002, the National Incident Management System, and the National Response Plan

FY 2007 Performance Measure:

- **Drums of Radioactive Waste Disposed of according to EPA Standards**

Performance Data: The Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) database contains the number of drums shipped by DOE waste generator facilities and placed in the DOE WIPP. The WIPP is a DOE facility located in southeastern New Mexico, 26 miles from Carlsbad, New Mexico. The WIPP Land Withdrawal Act was passed by Congress in October 1992 and amended in September 1996. The act transferred the land occupied by the WIPP to DOE and gave EPA, regulatory responsibility for determining whether the facility complies with radioactive waste disposal standards. Through July 2005, EPA has completed over 97 on–site inspections to evaluate waste prior to shipment to the WIPP facility.

Data Source: Department of Energy

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: The performance data used by EPA are collected and maintained by DOE. Under EPA's WIPP regulations (available on the Internet: http://www.epa.gov/radiation/wipp/background.htm (last accessed 7/18/200), all DOE WIPP-related data must be collected and maintained under a comprehensive quality assurance program

meeting consensus standards developed by the American Society of Mechanical Engineers (ASME) (available on the Internet: http://www.asme.org/codes (last accessed 7/18/2005)). EPA conducts regular inspections to ensure that these quality assurance systems are in place and functioning properly; no additional QA/QC of the DOE data is conducted by EPA.

Data Quality Reviews: N/A

Data Limitations: The DOE WIPP database contains the number of drums shipped by DOE waste generator facilities and placed in the DOE WIPP. Currently, there are five DOE waste generator facilities that are approved to generate and ship waste: Los Alamos National Laboratory, Rocky Flats Environmental Technology Site, Hanford Site, Idaho National Engineering and Environmental Laboratory, Savannah River Site.

Before DOE waste generator facilities can ship waste to the WIPP, EPA must approve the waste characterization controls and quality assurance procedures for waste identification at these sites. EPA conducts frequent independent inspections and audits at these sites to verify continued compliance with radioactive waste disposal standards and to determine if DOE is properly tracking the waste and adhering to specific waste component limits. Once EPA gives its approval, the number of drums shipped to the WIPP facility on an annual basis is dependent on DOE priorities and funding. EPA volume estimates are based on projecting the average shipment volumes over 40 years with an initial start up.

Error Estimate: N/A

New/Improved Data or Systems: None

References: The Department of Energy National TRU Waste Management Plan Quarterly Supplement http://www.wipp.ws/library/caolib.htm#Controlled (last accessed 7/18/2005) contains information on the monthly volumes of waste that are received at the DOE WIPP.

GOAL 1 OBJECTIVE 5

FY 2007 Performance Measures:

- **Annual Greenhouse Gas Emissions Reductions overall and by Sector**
- **Million metric tons of carbon equivalent (mmtce) of greenhouse gas emissions reduced in the building sector (PART measure)**
- **Million metric tons of carbon equivalent (mmtce) of greenhouse gas emissions reduced in the industry sector (PART measure)**
- **Million metric tons of carbon equivalent (mmtce) of greenhouse gas emissions reduced in the transportation sector (PART measure)**

Performance Database: Climate Protection Partnerships Division Tracking System. The tracking system's primary purpose is to maintain a record of the annual greenhouse gas

emissions reduction goals and accomplishments for the voluntary climate program using information from partners and other sources. It also measures the electricity savings and contribution towards the President's greenhouse gas intensity goal.

Data Source: EPA develops carbon and non-CO_2 emissions baselines. A baseline is the "business-as-usual" case" without the impact of EPA's voluntary climate programs. Baseline data for carbon emissions related to energy use comes from the Energy Information Agency (EIA) and from EPA's Integrated Planning Model (IPM) of the U.S. electric power sector. These data are used for both historical and projected greenhouse gas emissions and electricity generation, independent of partners' information to compute emissions reductions from the baseline and progress toward annual goals. The projections use a "Reference Case" for assumptions about growth, the economy, and regulatory conditions. Baseline data for non-carbon dioxide (CO_2) emissions, including nitrous oxide and other high global warming potential gases, are maintained by EPA. The non-CO2 data are compiled with input from industry and also independently from partners' information.

Data collected by EPA's voluntary programs include partner reports on facility- specific improvements (e.g. space upgraded, kilowatt-hours (kWh) reduced), national market data on shipments of efficient products, and engineering measurements of equipment power levels and usage patterns

Baseline information is discussed at length in the U.S. Climate Action Report 2002. The report includes a complete chapter dedicated to the U.S. greenhouse gas inventory (sources, industries, emissions, volumes, changes, trends, etc.). A second chapter addresses projected greenhouse gases in the future (model assumptions, growth, sources, gases, sectors, etc.)

U.S. Department of State. 2002. "U.S. Climate Action Report—2002. Third National Communication of the United States of America under the United Nations Framework Convention on Climate Change."

Partners do contribute *actual* emissions data biannually after their facility-specific improvements but these emissions data are not used in tracking the performance measure. EPA, however, validates the estimates of greenhouse gas reductions based on the actual emissions data received.

Methods, Assumptions, and Suitability: Most of the voluntary climate programs' focus is on energy efficiency. For these programs, EPA estimates the expected reduction in electricity consumption in kilowatt-hours (kWh). Emissions prevented are calculated as the product of the kWh of electricity saved and an annual emission factor (e.g., metric tons carbon equivalent (MMTCE) prevented per kWh). Other programs focus on directly lowering greenhouse gas emissions (e.g., Natural Gas STAR, Landfill Methane Outreach, and Coalbed Methane Outreach); for these, greenhouse gas emission reductions are estimated on a project-by-project basis. EPA maintains a Atracking system@ for emissions reductions.

The Integrated Planning Model, used to develop baseline data for carbon emissions, is an important analytical tool for evaluating emission scenarios affecting the U.S. power sector. The IPM has an approved quality assurance project plan that is available from EPA's program office.

QA/QC Procedures: EPA devotes considerable effort to obtaining the best possible information on which to evaluate emissions reductions from voluntary programs. Peer-reviewed carbon-conversion factors are used to ensure consistency with generally accepted measures of greenhouse gas (GHG) emissions, and peer-reviewed methodologies are used to calculate GHG reductions from these programs.

Partners do contribute *actual* emissions data biannually after their facility-specific improvements but these emissions data are not used in tracking the performance measure. EPA, however, validates the estimates of greenhouse gas reductions based on the actual emissions data received.

Data Quality Review: The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. The second such interagency evaluation, led by the White House Council on Environmental Quality, examined the status of U.S. climate change programs. The review included participants from EPA and the Departments of State, Energy, Commerce, Transportation, and Agriculture. The results were published in the *U.S. Climate Action Report-2002* as part of the United States' submission to the Framework Convention on Climate Change (FCCC). The previous evaluation was published in the *U.S. Climate Action Report-1997*. A 1997 audit by EPA's Office of the Inspector General concluded that the climate programs examined "used good management practices" and "effectively estimated the impact their activities had on reducing risks to health and the environment..."

Data Limitations: These are indirect measures of GHG emissions (carbon conversion factors and methods to convert material-specific reductions to GHG emissions reductions). Also, the voluntary nature of the programs may affect reporting. Further research will be necessary in order to fully understand the links between GHG concentrations and specific environmental impacts, such as impacts on health, ecosystems, crops, weather events, and so forth.

Error Estimate: These are indirect measures of GHG emissions. Although EPA devotes considerable effort to obtaining the best possible information on which to evaluate emissions reductions from its voluntary programs, errors in the performance data could be introduced through uncertainties in carbon conversion factors, engineering analyses, and econometric analyses. The only programs at this time aimed at avoiding GHG emissions are voluntary.

New/Improved Data or Systems: The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. EPA continues to update inventories and methodologies as new information becomes available.

References: The U.S. Climate Action Report 2002 is available at: www.epa.gov/globalwarming/publications/car/index.html. The accomplishments of many of EPA's voluntary programs are documented in the Climate Protection Partnerships Division Annual Report. The most recent version is *Protecting the Environment Together: ENERGY STAR and other Voluntary Programs*, Climate Protection Partnerships Division 2003 Annual Report.

FY 2007 Performance Measure:

- **Annual Energy Savings**

Performance Database: Climate Protection Partnerships Division Tracking System

Data Source: Data collected by EPA's voluntary programs include partner reports on facility specific improvements (e.g. space upgraded, kilowatt-hours (kWh) reduced), national market data on shipments of efficient products, and engineering measurements of equipment power levels and usage patterns.

Methods, Assumptions, and Suitability: Most of the voluntary climate programs' focus is on energy efficiency. For these programs, EPA estimates the expected reduction in electricity consumption in kilowatt-hours (kWh). Emissions prevented are calculated as the product of the kWh of electricity saved and an annual emission factor (e.g., MMTCE prevented per kWh). Other programs focus on directly lowering greenhouse gas emissions (e.g., Natural Gas STAR, Landfill Methane Outreach, and Coalbed Methane Outreach); for these, greenhouse gas emission reductions are estimated on a project-by-project basis. EPA maintains a Atracking system@ for energy reductions.

Energy bill savings are calculated as the product of the kWh of energy saved and the cost of electricity for the affected market segment (residential, commercial, or industrial) taken from the Energy Information Administration's (EIA) *Annual Energy Outlook* and *Annual Energy Review* for each year in the analysis (1993-2013). Energy bill savings also include revenue from the sale of methane and/or the sale of electricity made from captured methane. The net present value (NPV) of these savings was calculated using a 4-percent discount rate and a 2001 perspective.

QA/QC Procedures: EPA devotes considerable effort to obtaining the best possible information on which to evaluate energy savings from its voluntary programs.

Data Quality Review: The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. The second such interagency evaluation, led by the White House Council on Environmental Quality, examined the status of U.S. climate change programs. The review included participants from EPA and the Departments of State, Energy, Commerce, Transportation, and Agriculture. The results were published in the *U.S. Climate Action Report-2002* as part of the United States' submission to the Framework Convention on Climate Change (FCCC). The previous evaluation was published in the *U.S. Climate Action Report-1997*. A 1997 audit by EPA's Office of the Inspector General concluded that the climate programs examined "used good management practices" and "effectively estimated the impact their activities had on reducing risks to health and the environment...@

Data Limitations: The voluntary nature of programs may affect reporting. In addition, errors in the performance data could be introduced through uncertainties in engineering analyses and econometric analyses.

Error Estimate: Although EPA devotes considerable effort to obtaining the best possible information on which to evaluate emissions reductions from voluntary programs, errors in the performance data could be introduced through uncertainties in engineering analyses and econometric analyses.

New/Improved Data or Systems: The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. EPA continues to update inventories and methodologies as new information becomes available.

References: The U.S. Climate Action Report 2002 is available at: www.epa.gov/globalwarming/publications/car/index.html. The accomplishments of many of EPA=s voluntary programs are documented in the Climate Protection Partnerships Division Annual Report. The most recent version is *Protecting the Environment Together: Energy Star and Other Voluntary Programs*, Climate Protection Partnerships Division 2003 Annual Report.

GOAL 1 OBJECTIVE 6

FY 2007 Performance Measures:

- **Measure Fuel Economy of specific test vehicles with EPA-Developed Hybrid Technology Tested over EPA Driving Cycles**

- **Fuel Economy of EPA-developed hybrid package delivery vehicle over EPA city cycle**

Performance Database: Fuel economy test data for both urban and highway test cycles under the EPA Federal Test Procedure for passenger cars. The Clean Automotive Technology program commits EPA to develop technology by the end of the decade to satisfy stringent criteria emissions requirements and up to a doubling of fuel efficiency in personal vehicles such as SUVs, pickups, and urban delivery vehicles -- while simultaneously meeting the more demanding size, performance, durability, and power requirements of these vehicles.

Data Source: EPA fuel economy tests performed at the National Vehicle and Fuel Emissions Laboratory (NVFEL), Ann Arbor, Michigan

QA/QC Procedures: EPA fuel economy tests are performed in accordance with the EPA Federal Test Procedure and all applicable QA/QC procedures. Available on the Internet: http://www.epa.gov/otaq/sftp.htm.

Methods, Assumptions and Suitability: N/A

Data Quality Reviews: EPA's NVFEL laboratory is recognized as a national and international facility for fuel economy and emissions testing. NVFEL is also the reference point for private industry.

Data Limitations: Primarily due to EPA regulations, vehicle fuel economy testing is a well established and precise exercise with extremely low test to test variability (well less than 5%). Additional information is available on the Internet: http://www.epa.gov/otaq/testdata.html One challenge relates to fuel economy testing of hybrid vehicles (i.e., more than one source of onboard power), which is more complex than testing of conventional vehicles. EPA has not yet published formal regulations to cover hybrid vehicles. Relevant information is available on the Internet: http://www.ctts.nrel.gov/analysis/hev_test/procedures.shtml

Error Estimate: N/A

New/Improved Data or Systems: EPA is using solid engineering judgment and consultations with other expert organizations (including major auto companies) to develop internal procedures for testing hybrid vehicles.

References: See http://www.epa.gov/otaq/testproc.htm for additional information about testing and measuring emissions at the NVFEL.

FY 2007 Performance Measure:

- **Percentage of NAAQS research program publications rated as highly cited papers (PART Measure)**

Performance Database: No internal tracking system

Data Source: The source of data will be a contractor-produced bibliometric analysis of NAAQS program publications.

Methods, Assumptions and Suitability: The analysis will be completed using Thomson's Essential Science Indicators (ESI) and Journal Citation Reports (JCR) as benchmarks. ESI are a comprehensive compilation of essential science performance statistics and science trends data derived from Thomson's databases. The chief indicator of output, or productivity, is journal article publication counts. For influence and impact measures, ESI employs both total citation counts and cites per paper scores. The former reveals gross influence while the latter shows weighted influence, also called impact. JCR presents quantifiable statistical data, which provide a systematic, objective way to evaluate the world's leading journals and their impact and influence in the global research community.

QA/QC Procedures: Source data will be used in comparing program publications to field benchmarks, Essential Science Indicators (ESI) and Journal Citation Report (JCR).

Data Quality Reviews: Additional benchmarks will be used to determine the number of self-citations of articles by the same author in order to reduce the self-citation rate.

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References:

Essential Science Indicators®· Thomson Scientific. 2003.

Journal Citation Reports®. Thomson Scientific. 2003.

Citation Analysis. EPA's Endocrine Disruptors Chemicals (EDCs) Research Program, publication list. BOSC Program Review. December 2004.

FY 2007 Performance Measure:

- **Percent progress toward completion of a hierarchy of air pollutant sources based on the risk they pose to human health (PART Measure)**

- **Percent planned actions accomplished toward the long-term goal of reducing uncertainty in the science that supports the standard-setting and air quality management decisions (PART Measure)**

Performance Database: Program output; no internal tracking system.

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

GOAL 2 OBJECTIVE 1

FY 2007 Performance Measures:

- **The percentage of the population served by community water systems that receive drinking water that meets all applicable health-based drinking water standards through effective treatment and source water protection**
- **The percentage of population served by community water systems in Indian country that receive drinking water that meets all applicable health-based drinking water standards (PART measure)**
- **The percentage of community water systems in compliance with drinking water standards (PART measure)**
- **Dollars per community water system in compliance with health-based drinking water standards (PART measure)**

Performance Database: Safe Drinking Water Information System - Federal Version (SDWIS or SDWIS/FED). SDWIS contains basic water system information, population served, and detailed records of violations of the Safe Drinking Water Act and the statute's implementing regulations. The performance measure is based on the population served by community water systems that were active during any part of the performance year and did not have any violations designated as "health based." Exceedances of a maximum contaminant level (MCL) and violations of a treatment technique are health-based violations. SDWIS has provided annual results for ten years and reports on a fiscal year basis.

Data Source: Data are provided by agencies with primacy (primary enforcement authority) for the Public Water System Supervision (PWSS) program. These agencies are either: States, EPA for non-delegated states or territories, and the Navajo Nation Indian tribe, the only tribe with primacy. Primacy agencies collect the data from the regulated water systems, determine compliance, and report a subset of the data to EPA (primarily inventory and summary violations).

Methods, Assumptions and Suitability: Under the drinking water regulations, water systems must use approved analytical methods for testing for contaminants. State certified laboratories report contaminant occurrence to states that, in turn, determine exceedances of maximum contaminant levels or non-compliance with treatment techniques and report these violations to EPA. These results are subject to periodic performance audits and compared to results that states report to SDWIS. Primacy agencies' information systems and compliance determinations are audited on an average schedule of once every 3 years, according to a protocol. To measure program performance, EPA aggregates the SDWIS data into national statistics on overall compliance with health-based drinking water standards using the measures identified above.

QA/QC Procedures: EPA conducts a number of Quality Assurance/Quality Control steps to provide high quality data for program use, including:

(1) SDWIS/FED edit checks built into the software to reject erroneous data.
(2) Quality assurance manuals for states and Regions, which provide standard operating procedures for conducting routine assessments of the quality of the data, including timely corrective action(s).
(3) Training to states on reporting requirements, data entry, data retrieval, and error correction.
(4) User and system documentation produced with each software release and maintained on EPA's web site. System, user, and reporting requirements documents can be found on the

EPA web site, http://www.epa.gov/safewater/. System and user documents are accessed via the database link http://www.epa.gov/safewater/databases.html, and specific rule reporting requirements documents are accessed via the regulations, guidance, and policy documents link http://www.epa.gov/safewater/regs.html.

(5) Specific error correction and reconciliation support through a troubleshooter's guide, a system-generated summary with detailed reports documenting the results of each data submission, and an error code database for states to use when they have questions on how to enter or correct data.

(6) User support hotline available 5 days a week.

The SDWIS/FED equivalent of a quality assurance plan is the data reliability action plan[1] (DRAP). The DRAP contains the processes and procedures and major activities to be employed and undertaken for assuring the data in SDWIS meet required data quality standards. This plan has three major components: assurance, assessment, and control.

Data Quality Review: SDWIS data quality was identified as an Agency weakness in 1999 and has a corrective action completion target date that extends to 2007. SDWIS' weaknesses centered around five major issues: 1) completeness of the data (e.g., the inventory of public water systems, violations of maximum contaminant levels, enforcement actions) submitted by the states, 2) timeliness of the data sent by the states, i.e., if states do not report at specified times, then enforcement and oversight actions suffer, 3) difficulty receiving data from the states, 4) both cost and difficulty processing and storing data in SDWIS after it has been received, and 5) difficulty getting SDWIS data for reporting and analysis.

The first two issues are being addressed over a three-year period (2004-2007) through two (2000 and 2003) Data Reliability Action Plans. An information strategic plan[2] (ISP) was developed and implemented to address the last three issues, which deal primarily with technology (hardware and software) concerns. Implementation of the ISP, which ended in 2005, documents ways to improve tools and processes for creating and transferring data to EPA and incorporates newer technologies and adapts the Agency's Enterprise Architecture Plan to integrate data and allow the flow of data from reporting entities to EPA via the Agency's secure central data exchange (CDX) environment.

Routine data quality assurance and quality control (QA/QC) analyses of the Safe Drinking Water Information System (SDWIS) by the Office Water (OW) have revealed a degree of non-reporting of violations of health-based drinking water standards, and of violations of regulatory monitoring and reporting requirements (discussed further under Data Limitations). As a result of these data quality problems, the baseline statistic of national compliance with health-based drinking water standards likely is lower than previously reported. The Agency is engaged in discussions with states to more accurately quantify the impact of these data quality problems on

[1] *Data Reliability Action Plan*. U.S. EPA, October 2002. Office of Ground Water and Drinking Water internal work plan document. *Drinking Water Data Reliability Analysis and Action Plan (2003) For State Reported Public Water System Data In the EPA Safe Drinking Water Information System/Federal Version (SDWIS/FED)*

[2] U.S. EPA, Office of Water, *Office of Ground Water and Drinking Water Information Strategy* (under revision). See *Options* for *OGWDW Information Strategy (Working Draft), EPA 816-P-01-001*. Washington, DC, February 2001. Available on the Internet at http://www.epa.gov/safewater/data/informationstrategy.html

the estimate of national compliance with health-based drinking water standards. Even as improvements are made, SDWIS serves as the best source of national information on compliance with Safe Drinking Water Act requirements for program management, the development of drinking water regulations, trends analyses, and public information.

Data Limitations: Recent state data verification and other quality assurance analyses indicate that the most significant data quality problem is under-reporting by the states of monitoring and health-based standards violations and inventory characteristics. The most significant under-reporting occurs in monitoring violations. Even though those are not covered in the health based violation category, which is covered by the performance measure, failures to monitor could mask treatment technique and MCL violations. Such under-reporting of violations limits EPA's ability to: 1) accurately portray the amount of people affected by health-based violations, 2) undertake geo-spatial analysis, 3) integrate and share data with other data systems, and 4) precisely quantify the population served by systems, which are meeting the health-based standards. Therefore, the estimates of population-served could be high or low. As described in the Data Quality Review section above, EPA is currently changing the protocol to enhance the results of data audits as the best near-term option to improve these estimates, while continuing to explore other approaches, including use of contaminant occurrence data.

Error Estimate: EPA will be analyzing data, derived from the improved data audit protocol, with a robust statistical basis from which to extrapolate national results, and better aligned with requirements of the Data Quality Act. The long-term value of the improved audit process is that each year's results will be statistically representative and provide information closer in time to the needed performance reporting; for example, 2006 results, the first year of the improved audit process will be reported in 2007.

New/Improved Data or Systems: Several approaches are underway.

First, EPA will continue to work with states to implement the DRAP and ISP, which have already improved the completeness, accuracy, timeliness, and consistency of the data in SDWIS/FED through: 1) training courses for specific compliance determination and reporting requirements, 2) state-specific technical assistance, 3) increased number of data audits conducted each year, and 4) assistance to regions and states in the identification and reconciliation of missing, incomplete, or conflicting data.

Second, more states (from 30 to 40 by year-end 2005) will use SDWIS/STATE,[3] a software information system jointly designed by states and EPA, to support states as they implement the drinking water program.

Third, EPA has modified SDWIS/FED to (1) simplify the database, (2) minimize data entry options resulting in complex software, (3) enforce Agency data standards, and (4) ease the flow of data to EPA through a secure data exchange environment incorporating modern technologies,

[3] SDWIS/STATE (Version 8.1) is an optional Oracle data base application available for use by states and EPA regions to support implementation of their drinking water programs.
U.S. EPA, Office of Ground Water and Drinking Water. Data and Databases. Drinking Water Data & Databases – SDWIS/STATE, July 2002. Information available on the Internet: http://www.epa.gov/safewater/sdwis_st/current.html

all of which will improve the accuracy of the data. In 2006, full use of SDWIS/FED for receiving state reports will be implemented. Data will be stored in a data warehouse system that is optimized for analysis, data retrieval, and data integration from other data sources. It will improve the program's ability to more efficiently use information to support decision-making and effectively manage the program.

Finally, EPA, in partnership with the states, is developing information modules on other drinking water programs: the Source Water Protection Program, the Underground Injection Control Program (UIC), and the Drinking Water State Revolving Fund. These modules will be integrated with SDWIS to provide a more comprehensive data set with which to assess the nation's drinking water supplies, a key component of the goal. In 2006, agreement is expected to be reached on the data elements for reporting source water and UIC data. Plans have now been developed for design of systems to address these data flows. Developing the systems to receive the data is scheduled for 2007.

References:

Plans*

- SDWIS/FED does not have a Quality Assurance Project Plan - it is a legacy system which has "evolved" since the early 80s prior to the requirement for a Plan. The SDWIS/FED equivalent is the Data Reliability Action Plan
- Information Strategy Plan – SDWIS/FED (see footnote 2)
- Office of Water Quality Management Plan, available at http://www.epa.gov/water/info.html
- Enterprise Architecture Plan

Reports*

- 1999 SDWIS/FED Data Reliability
- 2003 SDWIS/FED Data Reliability Report - contains the Data Reliability Action Plan and status report

Guidance Manuals, and Tools

- PWSS SDWIS/FED Quality Assurance Manual
- Various SDWIS/FED User and System Guidance Manuals (includes data entry instructions, data On-line Data Element Dictionary-a database application, Error Code Data Base (ECDB) - a database application, users guide, release notes, etc.) Available on the Internet at <http://www.epa.gov/safewater/sdwisfed/sdwis.htm>
- Regulation-Specific Reporting Requirements Guidance. Available on the Internet at <http://www.epa.gov/safewater/regs.html>

* These are internal documents maintained by EPA's Office of Ground Water and Drinking Water. Please call 202-564-3751 for further information.

Web site addresses

- OGWDW Internet Site <http://www.epa.gov/safewater/databases.html> and contains access to the information systems and various guidance, manuals, tools, and reports.
- Sites of particular interest are: <http://www.epa.gov/safewater/data/getdata.html> contains information for users to better analyze the data, and

<http://www.epa.gov/safewater/sdwisfed/sdwis.htm> contains reporting guidance, system and user documentation and reporting tools for the SDWIS/FED system.

FY 2007 Performance Measures:

- **Fund Utilization Rate for the DWSRF.**
- **Number of additional projects initiating operations**

Performance Database: Drinking Water State Revolving Fund National Information Management System (DWNIMS.)

Data Sources: Data are entered by state regulatory agency personnel and by EPA's Regional staff; they are collected and reported once yearly.

Methods, Assumptions and Suitability: Data entered into DWNIMS directly represent the units of performance for the performance measure. These data are suitable for year-to-year comparison and trend indication.

QA/QC Procedures: EPA's headquarters and Regional offices are responsible for compiling the data and querying states as needed to assure data validity and conformance with expected trends. States receive data entry guidance from EPA headquarters in the form of annual memoranda (e.g., "2005 DWNIMS Data Collection.")

Data Quality Reviews: EPA's headquarters and Regional offices annually review the data submitted by the states. State data are publicly available at http://www.epa.gov/safewater/dwsrf/dwnims.html in individual state reports. Headquarters addresses significant data variability issues directly with states or through the appropriate EPA Regional office. Additionally, EPA's contractor tests the data for logical consistency. An annual EPA headquarters' "DWNIMS Analysis" provides detailed data categorization and comparison. This analysis is used during:

1. Annual EPA Regional office and state reviews to identify potential problems with the program's pace which might affect the performance measure.
2. Reviews by EPA's headquarters of regional oversight of state revolving funds.
3. Annual reviews by EPA's Regional offices of their states' revolving funds operations.

State data quality is also evaluated during annual reviews performed by EPA Regions. Any inconsistencies that are found in need of correction are incorporated into future DWNIMS reports. These adjustments are historically rare and very minor.

Data Limitations: There are no known limitations in the performance data, which states submit voluntarily. Erroneous data can be introduced into the DWNIMS database by typographic or definitional error. Typographic errors are controlled and corrected through data testing performed by EPA's contractor. Definitional errors due to varying interpretations of information requested for specific data fields have been largely reduced. These definitions are publicly available at: http://www.epa.gov/safewater/dwsrf/nims/dwdatadefs.pdf . There is typically a lag of approximately two months from the date EPA asks states to enter their data into the DWNIMS database, and when the data are quality-checked and available for public use.

New/Improved Data or Systems: This system has been operative since DWSRF inception. It is updated annually, and data fields are changed or added as needed.

References:
State performance data as shown in NIMS are available by state at:
http://www.epa.gov/safewater/dwsrf/dwnims.html
Definitions of data requested for each data field in NIMS is available at:
http://www.epa.gov/safewater/dwsrf/nims/dwdatadefs.pdf
2005 DWNIMS Data Collection – memo from Jeff Bryan, 7/12/05
DWNIMS analysis

FY 2007 Performance Measure:

- **Percent of states conducting sanitary surveys at community water systems once every three years.**

Performance Database: Primary enforcement responsibility (e.g. primacy) for the Public Water System Supervision (PWSS) program is authorized under §1413 of the Safe Drinking Water Act (SDWA). States and Indian Tribes are given primacy for public water systems in their jurisdiction if they meet certain requirements. A critical component of primacy is the requirement that a state must have a program to conduct sanitary surveys of the systems in its jurisdiction. A sanitary survey is an on-site review of the water sources, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of the facilities for producing and distributing safe drinking water. Inspectors conducting sanitary surveys must apply basic scientific information and have a working knowledge of the operation, maintenance, management, and technology of a water system to identify sanitary risks that may interrupt the multiple barriers of protection at a water system. There are eight essential elements of a sanitary survey as defined by the EPA/State Joint Guidance on Sanitary Surveys[4] and the interim enhanced surface water treatment rule: water source; treatment; distribution

[4] Guidance Manual for Conducting Sanitary Surveys of Public Water Systems; Surface Water and Ground Water Under the Direct Influence (GWUDI), (EPA 815-R-99-016, April 1999) http://www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf

system; finished water storage; pumps, pump facilities and controls; monitoring, reporting and data verification; water system management and operations; and operator compliance with state requirements.

Performance data for this measure will be complied from information collected during file audits of randomly selected community water systems (data verification or DV). The purpose of a DV is two-fold: (1) to detect discrepancies between the PWS data in the state files or database and the data reported to SDWIS/FED and (2) to ensure that the State is determining compliance in accordance with EPA approved state regulations. After the conduct of each DV, a report is generated which includes the findings for compliance with sanitary survey requirements. DVs are conducted on a cycle in order to visit each state at a frequency of every three years. Final reports for each state serve as the official data source for this measure until a new DV is conducted. Information derived for the DV reports will be calculated annually for this measure.

Data Source: State specific Final Data Verification Reports provide information on compliance with sanitary survey requirements. Information from DV reports for states will be calculated to measure performance.

Methods, Assumptions and Suitability: To assure that data collected during a DV is consistently captured and analyzed, the DV team follows the "EPA Protocol for Participation in a PWSS Program Data Verification" which includes revisions through April 4, 2005. The protocol provides guidance on statistical methodology for defining variables, calculating the statistical proportion (P), determining the appropriate sample size and selecting the systems for file review. Before selecting a sample of systems, the DV team must decide whether it wishes to stratify (or sort) the sample by some characteristic. Stratifying the sample permits more precision, allowing the team to make observations about subsets of systems. A sample may be stratified by system type, size, source, or a combination of these factors. For DV purposes, the sample is always stratified by system type (i.e., CWSs, NTNCWSs, and TNCWSs) since different regulations apply to different types of systems. Once the DV team determines the subset of systems from which the sample will be drawn, along with the number of systems which must be reviewed from that subset of systems, the SDWIS/FED random number generator selects the systems for review. Statistical principles dictate that samples must be selected in a truly random fashion in order to obtain unbiased estimates and achieve the desired precision level. For states whose files are kept in one central office, sample selection is straightforward. The SDWIS/FED random number generator pulls a random sample of systems from the entire subset of systems within the state. Hence, all systems have an equal chance of being chosen.

QA/QC Procedures: To assure the data collected during a DV is complete and accurate, the DV team follows the "EPA Protocol for Participation in a PWSS Program Data Verification." This protocol is intended as a "handbook" for people performing a DV. The protocol contains detailed instructions for reviewing and analyzing data for sanitary surveys. Since neither time nor resources allow a complete review of all sanitary survey data, the DV team must use a random sample of systems that is drawn from the total number of systems in each state. This random sample is statistically representative of systems in the state. The team then uses the statistical sampling results to draw reasonably accurate assumptions about all of the systems in the state, based on just a few systems.

Data Quality Reviews: Information derived from DVs is captured in a draft report and submitted to EPA (HQ and Regions) as well as the state where the DV was conducted for review. States and EPA conduct data quality reviews and provide additional information or data as necessary to assure accuracy and completeness. EPA works with states to resolve data issues. Reports are finalized and thus used to measure performance.

Data Limitations: OGWDW has an existing database for PWSS program information, the Safe Drinking Water Information System (SDWIS). Violations of sanitary survey requirements are captured in SDWIS. However, the data field to record sanitary survey frequency is not a mandatory field. Due to resource limitations, sanitary survey data cannot be verified for every system in every state each year. OGWDW employs a methodology to analyze a representative sample of systems during an audit.

FY 2007 Performance Measure:

- **Percentage of source water areas (both surface and ground water) for community water systems will achieve minimized risk to public health**

Performance Database: The source water assessment and protection programs are authorized under Sections 1453, 1428, and relevant subsections of 1452 of the Safe Drinking Water Act (SDWA).[5] EPA issued guidance to implement these programs in 1997, *State Source Water Assessment and Protection Programs Guidance*.[6] In March 2005, EPA issued supplemental reporting guidance, "State and Federal Source Water Assessment and Protection Program *Measures: Final Reporting Guidance."* Starting in FY 2005, and updated annually thereafter, states report to EPA on the results of their source water assessment programs (SWAPs) and progress in implementing source water protection (SWP) strategies, and whether such strategy implementation is affecting public health protection. To assess *the results of the SWAPs*, state reporting includes three elements: (1) the delineated source water areas around each well and intake, (2) whether the assessments are complete, and (3) most prevalent and most threatening sources of contamination. To assess *progress in implementing the SWP strategies*, state reporting includes two elements: (1) whether a prevention strategy for Community Water System source water areas has been adopted, and is being implemented and (2) whether such strategy implementation has reached a substantial level. To assess *whether the program is affecting public health protection*, states report change in the number of Community Water System source water areas with substantially implemented source water protection strategies. The Agency will develop a national summary of data on the progress of states' source water protection programs using these data elements in early 2006.

In FY 2003, EPA maintained pilot state-level summary data for each of these elements in a spreadsheet format and this format will be used for reporting for FY 2005. Beginning in FY 2005, states may, at their option, make available to EPA public water system-level data for each

[5] *Safe Drinking Water Act Amendments of 1996.* P.L. 104-182. (Washington: 6 August 1996). Available on the Internet at <http://www.epa.gov/safewater/sdwa/sdwa.html>

[6] U.S. EPA, Office of Water. *State Source Water Assessment and Protection Programs Guidance*. EPA 816-R-97-009 (Washington: US EPA, August 1997). Available on the Internet at <http://www.epa.gov/safewater/swp/swappg.html>

of these elements to be maintained in a set of data tables in the drinking water warehouse (for tabular data) and in event tables in the Office of Water's Reach Address Database (RAD) [7] (GIS data). These data will be compatible with the inventory data States are currently reporting to the Safe Drinking Water Information System (SDWIS).[8] Three states piloted this approach in 2003.

[Not publicly available. Contact the Drinking Water Protection Division at 202-564-3797.]

Data Source: Up to the end of FY 2004, states reported to the EPA Regional Offices the percentage of community water systems implementing source water protection programs. As noted above, states can report to EPA's Regional Offices using a spreadsheet approach. EPA has also developed a new source water data module to collect, store, and use public water system-level data received from states, but it may be refined as more states voluntarily use it over the next three years of the Strategic Plan. - See section "New/Improved Data or Systems."

Methods, Assumptions and Suitability: For this measure, the states' reporting of progress in implementing their source water assessment and protection programs will be based on EPA's 2005 guidance, "State and Federal Source Water Assessment and Protection Program *Measures: Final Reporting Guidance."* States will only report state-level summary information directly related to specific community water systems in a state-level database. While state reporting will be based on definitions and procedures found in the *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance,"* and even with the state flexibilities built into the definitions for substantial implementation strategies, EPA believes that the data will be reliable for use in making management decisions.

QA/QC Procedures: QA/QC procedures are included in the 2005 "State and Federal Source Water Assessment and Protection Program *Measures: Final Reporting Guidance."* Additionally, a series of data checks are built into the spreadsheet data collection procedures given to each Region for their work with states. States will be required to identify whether their reported summary-level data are based on a system-level database. EPA Regional offices also will work with individual states to obtain a description of their methods of collecting and verifying information.

Data Quality Reviews: EPA Regions will conduct data quality reviews of state data using the QA/QC procedures included with the spreadsheet-based data system, and work with states to resolve data issues. As a result, EPA expects the quality of data on the results of the assessments and source water protection activities to improve over time.

Data Limitations: Because the initial reporting provides only state-level summary information, there is no standard protocol for EPA to verify and validate the data against system-level information contained in state databases. In addition, much of the data reported by states is voluntary and based on working agreements with EPA because SDWA only requires states to complete source water assessments. That is, the only source water information that states are

[7] Watershed Assessment, Tracking & Environmental Results (WATERS). Available only on the Internet at <http://www.epa.gov/waters/>

[8] Safe Drinking Water Information System (SDWIS). Information available on the Internet at http://www.epa.gov/safewater/databases.html

required to report to EPA under SDWA is whether the assessments are completed. Although EPA's 2005 *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance"* set standard data definitions and procedures, it also provides for considerable flexibility in states' definition for substantial implementation of strategies, data collection protocols and analytical methods to evaluate their data. For example, some states may require each public water system to report data, while others may institute a voluntary process. Because much of the data reporting is voluntary and the individual state protocols may vary, state data may be incomplete and inconsistent across states.

Error Estimate: There is no basis for making an error estimate for this performance measure given the data limitations of state-level summary reporting described above.

New/Improved Data or Systems: The source water reporting module has been developed as a joint initiative between EPA, the Association of State Drinking Water Administrators (ASDWA), and the Ground Water Protection Council (GWPC). It will give EPA the ability to access the data directly from states through a data exchange agreement using an electronic data transfer capability. A state may choose, at its option, to provide EPA more detailed data in lieu of state-level summary reporting. The new source water data module will be integrated into the drinking water data warehouse and be compatible with Safe Drinking Water Information System (SDWIS) data already reported by states. Geospatial data (i.e., the intake and well point locations and the source water area polygons) will be maintained in EPA's Office of Water's Reach Access Database (RAD). The source water assessment and protection indicator data and other attribute data will be maintained in data tables in the drinking water warehouse. The source water data module is operational for states to pilot from FY 2005 through FY 2008. Three states used the module in the first pilot year 2003. A number of other states may report using the data module for the 2005 reporting period based on EPA/ASDWA/GWPC pilot process.

References:

Guidance Manuals

- U.S. EPA, Office of Water. *State Source Water Assessment and Protection Programs Guidance*. EPA 816-R-97-009 (Washington: US EPA, August 1997). Available on the Internet at <http://www.epa.gov/safewater/swp/swappg.html>
- *Source Water Assessment and Protection Measures: Initial Guidance, August, 2003.*
- *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance,"* March 2005.

Web site addresses

- US EPA Office of Ground Water and Drinking Water. <http://www.epa.gov/safewater>
- For more detailed information on Source Water topics, US EPA Office of Ground Water and Drinking Water, Source Water site. <http://www.epa.gov/safewater/protect.html>
- US EPA Office of Water (OW) Reach Access Database (RAD). Watershed Assessment, Tracking & Environmental Results (WATERS). <http://www.epa.gov/waters/>

- Safe Drinking Water Information System (SDWIS). http://www.epa.gov/safewater/databases.html

FY 2007 Performance Measure:

- **Number of households on tribal lands lacking access to safe drinking water**

Performance Database: Sanitation Tracking and Reporting System (STARS), the Indian Health Service (IHS), Office of Environmental Health and Engineering (OEHE), Division of Sanitation Facilities Construction (DSFC).

Data Sources: The STARS includes data on sanitation deficiencies, Indian homes and construction projects. STARS is currently comprised of two sub data systems, the Sanitation Deficiency System (SDS) and the Project Data System (PDS).

The SDS is an inventory of sanitation deficiencies for existing Indian homes and communities. The IHS is required to prioritize SDS deficiencies and annually report to Congress. The identification of sanitation deficiencies can be made several ways, the most common of which follow:

- Consultation with Tribal members and other Agencies
- Field visits by engineers, sanitarians, Community Health Representatives (CHRs) nurses, or by other IHS or tribal heath staff
- Sanitary Surveys
- Community Environmental Health Profiles
- Bureau of Indian Affairs (BIA) Inventory
- Census Bureau Reports (for comparison purposes only)
- Tribal Master Plans for Development
- Telephone Surveys
- Feasibility Studies

The most reliable and preferred method is a field visit to each community to identify and obtain accurate numbers of homes with sanitation deficiencies. The number of Indian homes within the communities must be consistent among the various methods cited above. If a field visit cannot be made, it is highly recommended that more than one method be used to determine sanitation deficiencies to increase the accuracy and establish greater credibility for the data.

The PDS is a listing of funded construction projects and is used as a management and reporting tool.

QA/QC Procedures: Quality assurance for the Indian country water quality performance measure depends on the quality of the data in the STARS. The STARS data undergoes a series of quality control reviews at various levels within the IHS DSFC. The DSFC is required to annually report deficiencies in SDS to Congress in terms of total and feasible project costs for proposed sanitation projects and sanitation deficiency levels for existing homes.

Data Quality Reviews: The SDS data initially undergoes a series of highly organized reviews by experienced tribal, IHS field, IHS district and IHS area personnel. The data are then sent to the DSFC headquarters office for review before final results are reported. The DSFC headquarters reviews the SDS data for each of the 12 IHS area offices. The data quality review consists of performing a number of established data queries and reports which check for errors and/or inconsistencies. In addition, the top 25 SDS projects and corresponding community deficiency profiles for each area are reviewed and scrutinized thoroughly. Detailed cost estimates are highly encouraged and are usually available for review.

Data Limitations: The data are limited by the accuracy of reported data in STARS.

Error Estimate: The IHS DSFC requires that higher-level projects (those with the possibility of funding prior to the next update) must be developed to allow for program implementation in an organized, effective, efficient manner. Those SDS projects (top 20%) must have cost estimates within 10% of the actual costs.

New/Improved Data or Systems: The STARS is a web based application and therefore allows data to be continuously updated by personnel at various levels and modified as program requirements are identified.

References:

1. Indian Health Service (IHS), Division of Sanitation Facilities (DSFC). Criteria for the Sanitation Facilities Construction Program, June 1999, Version 1.02, 3/13/2003. http://www.dsfc.ihs.gov/Documents/Criteria_March_2003.cfm

2. Indian Health Service (IHS), Division of Sanitation Facilities (DSFC). Sanitation Deficiency System (SDS), Working Draft, "Guide for Reporting Sanitation Deficiencies for Indian Homes and Communities", May 2003. http://www.dsfc.ihs.gov/Documents/SDSWorkingDraft2003.pdf

FY 2007 Performance Measure:

- **Percentage of the water miles/acres identified by States or Tribes as having fish consumption advisories in 2002 where increased consumption of safe fish is allowed. (485, 205 river miles, 11,277,276 lake acres)**

- **Percentage of water miles/acres with fish consumption advisory removed. (PART Measure)**

Performance Database: National Listing of Fish Advisories.[1] The database includes fields identifying the waters for which fish consumption advisories have been issued. The fields also identify the date upon which the advisory was issued, thus allowing an assessment of trends. The National Hydrographic Data (NHD) are used to calculate the spatial extent of the fish advisory. This information is updated continually as states and tribes issue or revise advisories. The National Listing of Fish Advisories database includes records showing that 24% of river

miles and 35% of lake acres were identified by states or tribes in calendar year 2003 as having fish with chemical contamination levels resulting in an advisory of potential human health risk from consumption. States and tribes report data on a calendar year basis. The calendar year data are then used to support the fiscal year (FY) commitments (e.g., calendar year 2005 data support the FY 2007 commitments). Metadata are also available describing methodologies used by states and tribes for establishing advisories. Fish advisory data have been collected since 1993.

Data Source: State and Tribal Governments. These entities collect the information and enter it directly into the National Listing of Fish Advisories database. EPA reviews advisory entries, including the states' or tribes' responses to an on-line survey, which support the advisory decision.

Methods, Assumptions and Suitability: The performance measure is calculated as the aggregate surface area covered by one or more individual advisories divided by the total waters of each state or territory. If a waterbody is covered by more than one advisory it is only counted once, and until all advisories are removed the waterbody is counted as having an advisory. The states and tribes submit the area data to the National Listing of Fish Advisories database.

QA/QC Procedures: A standard survey, which has been approved by OMB, is available on the Internet for electronic submission. A password is issued to ensure the appropriate party is completing the survey. EPA has national guidance[2,3] for states and tribes on developing and implementing quality assurance practices for the collection of environmental information related to fish advisories. This guidance helps assure data quality of the information that states and tribes use to decide whether to issue an advisory. The Office of Water's "Quality Management Plan," approved in September 2001 and published in July 2002[4], is general guidance that applies to information collection.

Data Quality Reviews: EPA reviews advisory entries and responses to the survey to ensure the information is complete, then follows-up with the state or local government to obtain additional information where needed. However, the Agency cannot verify the accuracy of the voluntary information that state and local governments provide. There have been no external party reviews of this information.

Data Limitations: There are two primary data limitations. First, participation in this survey and collection of data is voluntary. While the voluntary response rate has been high, it does not capture the complete universe of advisories. Puerto Rico, the Virgin Islands, and Guam do not report in the survey. Second, states have not assessed all waters for the need for advisories, so the information reported reflects a subset of water bodies in the state.

Error Estimate: We are unable to provide an error estimate. Submitting data to the National Listing of Fish Advisories database is voluntary and the Agency cannot be certain that the database contains information on 100% of the assessed waters in the United States. Therefore, we may be understating the total amount of waters assessed, the magnitude of which is not known.

New/Improved Data or Systems: EPA will use small grants to encourage states to investigate additional water bodies to determine if there is a need for fish consumption advisories. This will lead to a more complete characterization of the nation's fish safety. EPA has also begun tracking recommended "meal frequencies" in the state and tribal advisories to account for the instances where advisories are modified to allow greater consumption.

References:

1. U.S. EPA. Office of Water. "2004 National Listing of Fish Advisories." Washington, DC: EPA-823-F-05-004. September 2005. Available at http://epa.gov/waterscience/fish/advisories/fs2004.pdf
2. U.S. EPA. Office of Water. "Fish Sampling and Analysis." Volume 1 of "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories." 3rd ed. EPA-823-B-00-007. Washington DC: EPA, 2000. Available at http://www.epa.gov/waterscience/fishadvice/volume1/.
3. U.S. EPA. Office of Water. "Risk Assessment and Fish Consumption Limits." Volume 2 of "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories." 3rd ed.@ EPA-823-B-00-008. Washington DC: EPA, 2000. http://www.epa.gov/waterscience/fishadvice/volume2/.
4. U.S. EPA. Office of Water. "Quality Management Plan." EPA 821-X-02-001. Washington, DC: EPA, July 2002. Available at http://www.epa.gov/water/programs/qmp_july2002.pdf

FY 2007 Performance Measure:

- **Percentage of the shellfish-growing acres monitored by states that are approved or conditionally approved for use**

Performance Database: There is no database currently available, although one is under development (see below). In the past, data to support this measure came from surveys of States that are members of the Interstate Shellfish Sanitation Conference (ISSC), conducted at 5-year intervals and periodic updates requested from the Interstate Shellfish Sanitation Conference (most recent, 2003 data released in 2004).

Data Source: The ISSC requests the data on approved acreages from shellfish producing states and prepares reports. Survey responses are voluntary.

Methods, Assumptions and Suitability: The methods used by the state programs to produce the data used by the ISSC are based on the National Shellfish Sanitation Plan and Model Ordinance; the operation of those state programs is overseen by the FDA.

QA/QC Procedures: States are responsible for the internal QA/QC of their data.

Data Quality Reviews: The ISSC reviews the state data during report preparation to ensure completeness and accuracy, and follows up with states where necessary.

Data Limitations: Based on NOAA's previous surveys and the voluntary nature of the information collected, potential data limitations may include incomplete coverage of shellfish growing areas.

Error Estimate: No estimates are available.

New/Improved Data or Systems: The ISSC initiated development of the Shellfish Information Management System (SIMS) in July 2002. The database is being developed and implemented by the National Oceanographic and Atmospheric Administration (NOAA) on behalf of the Interstate Shellfish Sanitation Conference (ISSC), a Cooperative Program chartered by the Food and Drug Administration (FDA). The database will include relevant information that is collected by State Shellfish Control Authorities. Historically, NOAA collected shellfish-growing area data in 5-year intervals, 1985, 1990, and 1995. These data were not stored in a database. Once operational, SIMS will be the first national shellfish growing area database and will include NOAA's 1995 and 2003 data. State summary information can then be used to track trends relevant to the performance measure, with the 1995 data as the baseline. The SIMS database is designed as a real time database. The ISSC plans to request data updates annually, but states may update their data any time. These data may be accessed at any time so timely status reports can be generated.

Currently, no long-term database management plan exists.

References: None at this time.

FY 2007 Performance Measure:

- **Percentage of days of the beach season that coastal and Great Lakes beaches monitored by state beach safety programs are open and safe for swimming**

Performance Database: The data are stored in PRAWN (Program tracking, beach Advisories, Water quality standards, and Nutrients), a database that includes fields identifying the beaches for which monitoring and notification information are available and the date the advisory or closure was issued, thus enabling trend assessments to be made. The database also identifies those states that have received a BEACH (Beaches Environmental Assessment and Coastal Health) Act [P.L. 106-284] grant. EPA reports the information annually, on a calendar year basis, each May. The calendar year data are then used to support fiscal year commitments (e.g., 2006 calendar year data are used to report against FY 2007 commitments). As of 2004, States and Territories monitor for pathogens at 3,574 coastal and Great Lakes beaches, up from 2,823 beaches in 2002[1].

Data Source: Since 1997 EPA has surveyed state and local governments for information on their monitoring programs and on their advisories or closures. The Agency created the PRAWN database to store this information. State and local governmental response to the survey was voluntary up through calendar year 2002. Starting in calendar year 2003, data for many beaches along the coast and Great Lakes had to be reported to EPA as a condition of grants awarded under the BEACH Act[2]. Since 2005, states have used an on-line process called eBeaches to

electronically transmit beach water quality and swimming advisory information to EPA instead of using the paper survey. The latest information reported by a state or local government is accessible to the public through the BEACON (Beach Advisory Closing On-line Notification) system.

Methods, Assumptions and Suitability: The data are an enumeration of the days of beach-specific advisories or closures issued by the reporting state or local governments during the year. Performance against the target is tracked using a simple count of the number of beaches responding to the survey and the days over which the advisory or closure actions were taken. This is compared to the total number of days that every beach could be open. Thus the data are suitable for the performance measure.

QA/QC Procedures: Since 1997, EPA has distributed a standard survey form, approved by OMB, to coastal and Great Lake state and county environmental and public health beach program officials in hard copy by mail. The form is also available on the Internet for web-entry electronic submission. When a state or local official enters data using the web-entry format, a password is issued to ensure the appropriate party is completing the survey. Currently the Agency has procedures for information collection (see Office of Water's "Quality Management Plan," approved September 2001 and published July 2002[3]). In addition, coastal and Great Lakes states receiving BEACH Act grants are subject to the Agency's grant regulations under 40 CFR 31.45. These regulations require states and tribes to develop and implement quality assurance practices for the collection of environmental information.

Data Quality Review: EPA reviews the survey responses to ensure the information is complete, following up with the state or local government to obtain additional information where needed. The Agency also reviews the QA/QC reports submitted by States and Territories as part of their grant reporting. There have been no external party reviews of this information.

Data Limitations: From calendar year 1997 to calendar year 2002, participation in the survey and submission of data has been voluntary. While the voluntary response rate has been high, it has not captured the complete universe of beaches. The voluntary response rate was 92% in calendar year 2002 (240 out of 261 contacted agencies responded). The number of beaches for which information was collected increased from 1,021 in calendar year 1997 to 2,823 in calendar year 2002. Participation in the survey is now a mandatory condition for implementation grants awarded under the BEACH Act program to coastal and Great Lakes states. Except for Alaska, all coastal and Great Lakes states and territories have annually applied for implementation grants since they have been available.

Error Estimate: As of 2004, States and Territories report that they monitor at 3,574 of the 6,099 coastal and Great Lakes beaches. This monitoring varies between States. For example, North Carolina monitors all its 228 beaches whereas South Carolina monitors 24 of 229 beaches. Where monitoring is done, there is some chance that the monitoring may miss some instances of high pathogen concentrations. EPA's 2002 National Health Protection Survey of Beaches found that 90% of the nation's beaches are monitored once a week or less[4]. Studies in southern California found that weekly sampling missed 75% of the pathogen exceedances[5], and that 70% of the exceedances lasted for only one day[6]. An EPA Office of Research and Development

(ORD) beach monitoring study found a positive correlation between pathogen indicator densities one day as compared to densities the next day, but that the correlation was negligible when compared to densities after four days[7]. These studies indicate that weekly sampling most likely misses many pathogen events that can affect public health. This information is not sufficient to calculate the potential error in the reporting, but it is sufficient to indicate that the reporting may understate the number of days that beaches should be closed or under advisory.

New/Improved Data or Systems: Participation in the survey is now a mandatory condition for grants awarded under the BEACH Act program. As the Agency awards these implementation grants, it will require standard program procedures, sampling and assessment methods, and data elements for reporting. To the extent that state governments apply for and receive these grants, the amount, quality, and consistency of available data will improve. In FY 2007, EPA expects the 35 coastal and Great Lakes states to apply for grants to implement monitoring and notification programs.

References

1. U.S. EPA. Office of Water. "EPA's Beach Program: 2004 Swimming Season Update." EPA-823-F-05-006. Washington, DC, July 2005. Available at http://www.epa.gov/waterscience/beaches2004fs.pdf
2. U.S. EPA. Office of Water. "National Beach Guidance and Required Performance Criteria for Grants." EPA-823-B-02-004. Washington DC: EPA, June 2002. Available at http://www.epa.gov/waterscience/beaches/guidance/all.pdf
3. U.S. EPA. Office of Water. "A Quality Management Plan." EPA 821-X-02-001. Washington, DC: EPA, July 2002. Available at http://www.epa.gov/water/programs/qmp_july2002.pdf
4. U.S. EPA. Office of Water. "EPA's BEACH Watch Program: 2002 Swimming Season." EPA-823-F-03-007. Washington, DC, May 2003. Available at http://www.epa.gov/waterscience/beaches/beachwatch2003-newformat.pdf
5. Leecaster. M.K. and S.B. Weisberg, Effect of Sampling Frequency on Shoreline Microbiology Assessments, *Marine Pollution Bulletin*, 42(11), 2001.
6. Boehm, A.B., et. al., Decadal and Shorter Period Variability of Surf Zone Water Quality at Huntington Beach, California, *Environmental Science and Technology*, 36(18), 2002.
7. U.S. EPA. Office of Research and Development. "The EMPACT Beaches Project, Results and Recommendations from a Study on Microbiological Monitoring In Recreational Waters." EPA 600/9-02/xxx. Washington, DC, Sept. 2002.(Draft Report).

GOAL 2 OBJECTIVE 2

FY 2007 Performance Measure:

- **Percentage of waters assessed: assess and identify trends for 100% of the Nation's waters by 2018 using statistically valid surveys to evaluate the extent that waters support fishable and swimmable goals of the Clean Water Act.**

Performance Database: Data generated from the national assessment will be housed in the EPA Office of Water's STORET (STOrage and RETrieval) data warehouse. Prior to entering the STORET warehouse, all datasets are housed in a temporary facility, such as ORD's SWIM database, where they are examined for QA purposes and undergo statistical analysis. Finalized datasets transferred to the STORET warehouse will include all water quality, physical and biological data and associated metadata for each survey. The STORET warehouse is available on the web at http://www.epa.gov/STORET/index.html.

Data Source:
Samples will be collected over one sampling season, during a specified index period for each resource. Sites are sampled one time, with additional repeat samples collected at 10 percent of the sites to determine precision of methods. Surveys collect a suite of indicators relating to the biological, physical habitat and water quality of the resource in order to assess both the resource condition and determine the percentage meeting the goals of the CWA. Surveys will collect information on biological and abiotic factors at 30-50 sites on an ecoregion level II scale for each resource. These data are collected through EPA-State collaboration. Prior to sampling, field crews will undergo intensive training by EPA personnel on field sampling and collection techniques. Laboratory analysis will be conducted at either a state lab or contract lab following specified protocols for the survey. Data collection follows a Quality Assurance Project Plan (QAPP), with subsequent testing and auditing to ensure its application.

Methods, Assumptions and Suitability: The surveys are conducted using a probabilistic survey design, which allows extrapolation of results to the target population (specified water resource, e.g., wadeable streams, lakes, rivers, etc.). The collection design maximizes the spatial spread between sites, located by specific latitude and longitude combinations. The survey utilizes an indexed sampling period to increase the probability of accurately assessing condition and identifying any problems in water quality, physical or biological indices if they exist. Based on the QAPP and field protocol documents, a site is located by the sampling crew via Global Positioning System (GPS). Data are collected for each parameter following the protocols outlined in the field operations manual. Indices for the probabilistic surveys relate to the condition of the resource and the extent that the waters are supporting the fishable and swimmable goals of the Clean Water Act. Samples taken from the field are stored in accordance with field manual instructions and shipped to the processing laboratory. Laboratories will follow quality assurance (QA) plans and complete analysis and provide electronic information to the state or EPA. EPA and the state exchange data to ensure that each has a complete set. EPA and states analyze the data to assess regional and national condition of the water resource surveyed. Results of the analyses on a national and regional basis will be published in a publicly accessible peer reviewed report released within two years of sample collection. The overall change in condition of the water body type will be assessed on a five year cycle.

> *Assumptions*: (1) The underlying target population (water resource sampled for the survey) has been correctly identified; (2) GPS is successful; (3) QAPP and field collection manuals are followed; (4) all samples are successfully collected; (5) all analyses are completed in accordance with the QAPP; and (6) a combination of data into indices is completed in a statistically rigorous manner.

Suitability: By design, all data are suitable to be aggregated up to the regional and national level to characterize the ecological condition of the waterbody resource and the associated stressors. Samples provide site specific point-in-time data and excellent representation of the entire resource (extrapolation to the entire resource supportable). Data will be used to characterize populations and subpopulations of waterbody resources through time and space. Data analysis and interpretation will be peer reviewed prior to completion of final report. The data are suitable for individual reports and to establish a baseline for subsequent surveys to evaluate trends.

QA/QC Procedures: Collection and processing of all samples are described in QAPP and Field Protocols documents associated with each survey. In addition, the QAPP will contain specific Data Quality Objectives (DQOs) and Measurement Quality Objectives (MQOs) associated with each survey. To ensure that the survey is obtaining the DQOs and MQOs, there are several QA steps built into each survey. Training for all crew members is required before sampling begins. Field evaluations are conducted for all crews to ensure methods are being followed. Each laboratory involved in the sample processing will adhere to the specified laboratory protocols and undergo a thorough and documented quality assurance/quality control (QA/QC) process. Submitted data will undergo a final QC check before analysis begins.

Data Quality Reviews: A concurrent peer review and public comment period will be held for each survey. During this time, the draft report will be posted on the web for interested parties to review and submit comments. An independent group of experts will be selected to serve on a peer review panel for the report. In house audits will also be conducted over the course of the survey.

Data Limitations: Because the data are collected in a manner to permit calculations of uncertainty and designed to meet specific Data Quality Objectives (DQOs), the results at the regional level are within about 2-4% of true values dependent upon the specific sample type. Detailed QA/QC checks throughout the survey reduce the data limitations and errors in sampling. The scale of the reporting units is limited by the number of samples taken in a specific region. To make a statistically valid statement about the condition of the resource, sample size should minimally include 30-50 sites per region. Since samples are collected one time at each site per survey, trends analysis will depend on future survey work. Lag time between sample collection and reporting will be between 1-2 years.

Error Estimate: The estimation of condition will vary for the national condition and the regional condition for each survey. The condition estimates are determined from the survey data using cumulative distribution functions and statistically-based uncertainty estimates.

New/Improved Data or Systems: Additional indicators, addressing regional specific needs can be added to the survey over time. QA requirements will be met by all laboratories participating in the surveys. Probabilistic surveys repeated on the same water body type utilizing a similar sample design will show condition trends for the resource on a broad geographic scale.

References:

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STORET database website. http://www.epa.gov/STORET/index.html.

U.S. Environmental Protection Agency. 2001. *National Coastal Condition Report*. EPA-620/R-01/005

U.S. Environmental Protection Agency. 2004. *National Coastal Condition Report II*. EPA-620/R-03/002

FY 2007 Performance Measures*:*

- **Annual percentage of water body segments identified by States in 2000 as not attaining standards, where water quality standards are now fully attained (PART measure)**
- **Restore water quality to allow swimming in stream miles and lake acres identified by states**
- **Cost per water segment restored (PART measure)**

Performance Database: The Watershed Assessment Tracking Environmental Results System (WATERS– found at http://www.epa.gov/waters/) is EPA's approach for viewing water quality information related to this measure. WATERS can be used to view "303(d) Information," compiled from, *States' Listings of Impaired Waters as Required by Clean Water Act Section 303(d)* (referred to here in brief as "303(d) lists"), which are recorded in the National Total Maximum Daily Load (TMDL) Tracking System. This information (found at http://www.epa.gov/owow/tmdl/status.html) is used to generate reports that identify waters that are not meeting water quality standards ("impaired waters"). This information, combined with information and comment from EPA Regions and states, yields the baseline data for this measure: the number of impaired waters in 1998/2000. As TMDL and other watershed-related activities are developed and implemented, water bodies which were once impaired will meet water quality standards, and thus will be removed from the year 1998/2000 impaired totals. Changes will be recorded in reports, scheduled every six years (e.g. reporting years 2006 and 2012), as percentage improvements to water body impairment.

Data Source: The underlying data source for this measure is State 303(d) lists of their impaired water bodies. These lists are submitted with each biennial (calendar year) reporting cycle. The baseline for this measure is the 1998 list (States were not required to submit lists in 2000; however, if states did submit a 2000 list, then that more recent list was used as the baseline). States prepare the lists using actual water quality monitoring data, probability-based monitoring information, and other existing and readily available information and knowledge the state has, in

order to make comprehensive determinations addressing the total extent of the state's water body impairments. Once EPA approves a state's 303(d) list, EPA enters the information into WATERS, as described above. Delays are often encountered in state submissions and in EPA's approval of these biennial submissions. Establishing more certain procedures to keep on schedule is being considered.

Methods, Assumptions, and Suitability: States employ various analytical methods of data collection, compilation, and reporting including: 1) Direct water samples of chemical, physical, and biological parameters; 2) Predictive models of water quality standards attainment; 3) Probabilistic models of pollutant sources; and 4) Compilation of data from volunteer groups, academic interests and others. EPA-supported models include BASINS, QUAL2E, AQUATOX, and CORMIX. Descriptions of these models and instructions for their use can be found at www.epa.gov/OST/wqm/. The standard operating procedures and deviations from standard methods for data sampling and prediction processes are stored by states in the STOrage and RETrieval (STORET) database. EPA aggregates state data to generate the national performance measure. State-provided data describe attainment of designated uses in accordance with state water quality standards and thus represent a direct measure of performance. Delays are often encountered in state 303d lists and 305b submissions, and in EPA's approval of the 303(d) portion of these biennial submissions. Establishing more certain procedures to prevent these delays is being considered.

QA/QC Procedures: QA/QC of data provided by states pursuant to individual state 303(d) lists (under CWA Section 303(d)) is dependent on individual state procedures. EPA regional staff interacts with the states during the process of approval of the lists and before the information is entered into the database to ensure the integrity of the data. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001[9]. EPA requires that each organization prepare a document called a quality management plan (QMP) that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies (e.g., those programs involved in the collection or use of environmental data).

Data Quality Review: Recent independent reports have cited that weaknesses in monitoring and reporting of monitoring data undermine EPA's ability to depict the condition of the Nation's waters and to support scientifically sound water program decisions. The most recent reports include the 1998 *Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program*[10], the March 15, 2000 Government Accounting Office report *Water Quality: Key Decisions Limited by Inconsistent and Incomplete Data*[11], the 2001 National Academy of

[9] National Research Council, Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction, Water Science and Technology Board, *Assessing the TMDL Approach to Water Quality Management* (Washington, DC: National Academy Press, 2001).

[10] USEPA, National Advisory Council for Environmental Policy and Technology, *Report of the Federal Advisory Committee on the Total Maximum Daily Load Program.* EPA 100-R-09-8006 (1998).

[11] GAO. *Water Quality: Key EPA and State Decisions Limited by Inconsistent and Incomplete Data* (Washington, DC: 2000), RCED-00-54 and *Water Quality: Inconsistent State Approaches Complicate Nation's Efforts to Identify Its Most Polluted Waters*, GAO-02-186 (Washington, DC: 2002)

Sciences Report *Assessing the TMDL Approach to Water Quality Management*[12] and *EPA's Draft Report on the Environment.*[13]

In response to these evaluations, EPA has been working with states and other stakeholders to improve: 1) data coverage, so that state reports reflect the condition of all waters of the state; 2) data consistency to facilitate comparison and aggregation of state data to the national level; and 3) documentation so that data limitations and discrepancies are fully understood by data users.

First, EPA enhanced two existing data management tools (STORET and the National Assessment Database) so that they include documentation of data quality information.

Second, EPA has developed a GIS tool called WATERS that integrates many databases including STORET, the National Assessment Database, and a new water quality standards database. These integrated databases facilitate comparison and understanding of differences among state standards, monitoring activities, and assessment results.

Third, EPA and states have developed guidance. The 2006 Integrate Report Guidance (released August 3, 2005 at http://www.epa.gov/owow/tmdl/2006IRG)[14] provides comprehensive direction to states on fulfilling reporting requirements of Clean Water Act sections 305 (b) and 303(d). Also, the *Consolidated Assessment and Listing Methodology – Toward a Compendium of Best Practices*[15] (released on the Web July 31, 2002 at www.epa.gov/owow/monitoring/calm.html) intended to facilitate increased consistency in monitoring program design and the data and decision criteria used to support water quality assessments.

Fourth, the Office of Water (OW) and EPA's Regional Offices have developed the *Elements of a State Water Monitoring and Assessment Program*, (August 2002).[16] This guidance describes ten elements that each state water quality monitoring program should contain and proposes time-frames for implementing all ten elements.

In addition, a recent evaluation by the EPA Office of the Inspector General[17] recommended that EPA focus on improving its watershed approach by:

- Facilitating stakeholder involvement in this approach
- Better integrating the watershed approach into EPA core programs,

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[12] Assessing the TMDL Approach to Water Quality Management. 2001. Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction, Water Science and Technology Board, National Research Council

[13] US EPA, *Draft Report on the Environment 2003*. EPA 260-R-02-006 (2003). Available at http://www.epa.gov/indicators/roe/index.htm (accessed 12 December 2005)

[14] USEPA, Office of Water, *2006 Guidance for Assessment, Listing, and Reporting Requirements Pursuant to Sections, 303(d), 305(b), and 314 of the Clean Water Act* (2005). Available at http://www.epa.gov/owow/tmdl/2006IRG (accessed 12 December 2005)

[15] U.S. EPA, Office of Water, *Consolidated Assessment and Listing Methodology- Toward a Compendium of Best Practices.* (Washington, DC: 2002) Available at www.epa.gov/owow/monitoring/calm.html (accessed 12 December 2005)

[16] USEPA, Office of Water, *Elements of a State Water Monitoring and Assessment Program*, EPA 841-B-03-003 (Washington, DC: 2003). Available at http://www.epa.gov/owow/monitoirng/repguide.html (accessed 12 December 2005)

[17] USEPA Office of the Inspector General, *Sustained Commitment Needed to Further Advance the Watershed Approach* (2005). Available at http://www.epa.gov/oig/reports/2005/20050921-2005-P-00025.pdf.

- Refining the Agency strategic plan to better evaluate key programs and activities, and
- Improving the measurement system by which watershed progress is assessed.

EPA is engaged in many activities to strengthen its footprint in above four foci. Specific examples, as noted in Assistant Administrator Grumbles' December 2005 reply to the Inspector General's evaluation, follow:

First, examples of how the EPA Office of Water is working to facilitate stakeholder involvement in this approach are monthly Webcasts (topics have included strategies, tools, and techniques for sustainable watersheds) and plans to release a Watershed Planning Handbook in 2006.

Second, EPA core program activities are focusing more heartily on watershed initiatives. EPA is preparing 2006 guidance on watershed TMDLs and guidance for using Clean Water State Revolving funds for state watershed activities.

Third, EPA is working to refine its strategic planning process with the April 2005 inception of the Watershed Managers Forum, a channel of communication between EPA Regional offices and Headquarters on issues, planning, and organizational steps to successfully implement watershed initiatives of EPA's *Strategic Plan*[18]. The Office of Water is also strengthening linkage of its information technology capabilities and monitoring efforts to meet goals of EPA's strategic planning.

Fourth, EPA is working to improve measurement of its progress by conducting detailed analysis of options for measuring performance. Areas of general interest in this effort include tracking improvements short of full restoration, and measures for the extensive work the Office of Water does to maintain water quality.

Data Limitations: Data may not precisely represent the extent of impaired waters because states do not employ a monitoring design that monitors all their waters. States, territories and tribes collect data and information on only a portion of their water bodies. States do not use a consistent suite of water quality indicators to assess attainment of water quality standards. For example, indicators of aquatic life use support range from biological community assessments to levels of dissolved oxygen to concentrations of toxic pollutants. These variations in state practices limit how the CWA Sections 305(b) reports and the 303(d) lists provided by states can be used to describe water quality at the national level. There are also differences among their programs, sampling techniques, and standards.

State assessments of water quality may include uncertainties associated with derived or modeled data. Differences in monitoring designs among and within states prevent the agency from aggregating water quality assessments at the national level with known statistical confidence. States, territories, and authorized tribes monitor to identify problems and typically lag times between data collection and reporting can vary by state.

Error Estimate: No error estimate is available for this data.

[18] USEPA, Office of the Chief Financial Officer, *2003-2008 Strategic Plan: Direction for the Future*, (2003). Available at http://www.epa.gov/ocfo/plan/2003sp.pdf (accessed 16 December 2005).

New/Improved Data Systems: The Office of Water has been working with states to improve the guidance under which 303(d) lists are prepared. EPA issued new listing guidance entitled *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act* during summer 2005. The Guidance is a comprehensive compilation of relevant guidance EPA has issued to date regarding the Integrated Report. There are a few specific changes from the 2004 guidance. For example, the 2006 Integrated Report Guidance provides greater clarity on the content and format of those components of the Integrated Report that are recommended and required under Clean Water Act sections 303(d), 305(b), and 314. The guidance also gives additional clarity and flexibility on reporting alternatives to TMDLs for attaining water quality standards (e.g., utilization of reporting Category 4b).

References:

USEPA, Office of the Inspector General. 2005. *Sustained Commitment Needed to Further Advance the Watershed Approach*. Available at http://www.epa.gov/oig/reports/2005/20050921-2005-P-00025.pdf.

USEPA, Office of Water. 2005. *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act.* Available at http://www.epa.gov/owow/tmdl/2006IRG.

USEPA, Office of the Chief Financial Officer. 2003. *2003-2008 Strategic Plan: Direction for the Future*. Available at http://www.epa.gov/ocfo/plan/2003sp.pdf.

USEPA. 2003. *Draft Report on the Environment 2003*. EPA 260-R-02-006. Available at http://www.epa.gov/indicators/roe/index.htm.

USEPA, Office of Water. 2003. *Elements of a State Water Monitoring and Assessment Program.* EPA 841-B-03-003. Washington, DC. Available at http://www.epa.gov/owow/monitoring/repguid.html.

USEPA, National Advisory Council for Environmental Policy and Technology. 1998. *Report of the Federal Advisory Committee on the Total Maximum Daily Load Program*. EPA 100-R9-8006.

USEPA. 2002. *Consolidated Assessment and Listing Methodology – Toward a Compendium of Best Practices.* Washington, DC. Available at http://www.epa.gov/owow/monitoring/calm.html.

Government Accountability Office. 2002. *Water Quality: Inconsistent State Approaches Complicate Nation's Efforts to Identify its Most Polluted W*aters. GAO-02-186. Washington, DC.

Government Accountability Office. 2000. *Water Quality: Key EPA and State Decisions Limited by Inconsistent and Incomplete Data*. GAO-RCED-00-54. Washington, DC.

National Research Council, Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction. 2001. *Assessing the TMDL Approach to Water Quality Management.* Washington, DC: National Academy Press.

FY 2007 Performance Measures*:*

- **Number of TMDLs that are established or approved by EPA on schedule consistent with national policy (cumulative) (PART measure)**
- **Number of TMDLs that are established by States and approved by EPA on a schedule consistent with national policy (cumulative) (PART measure)**

Performance Database: The National Total Maximum Daily Load (TMDL) Tracking System (NTTS) is a database which captures water quality information related to this measure. Watershed Assessment Tracking Environmental Results System (WATERS– found at http://www.epa.gov/waters/) is EPA's approach for viewing water quality information related to this measure. TMDL information (found at http://www.epa.gov/owow/tmdl/status.html) is used to generate reports that identify waters for which EPA has approved state-established TMDLs and for which EPA has established TMDLs. Annual TMDL totals, spanning 1996 to the present, are available from NTTS on a fiscal year basis. As TMDLs and other watershed-related activities are developed and implemented, water bodies which were once impaired will meet water quality standards. Thus these TMDL measures are closely tied to the PART measure, "Percentage of water body segments identified by States in 2000 as not attaining standards, where water quality standards are now fully attained;" restored water bodies will be removed from the list of impaired water segments.

Data Source: State-submitted and EPA-approved TMDLs and EPA-established TMDLs are the underlying data for this measure. Electronic and hard copies are made available by states and often linked to EPA Web sites. More specifically, WATERS allows search for TMDL documents at http://www.epa.gov/waters/tmdl/tmdl_document_search.html.

Methods, Assumptions, and Suitability: State and EPA TMDLs are thoroughly and publicly reviewed during their development. Upon approval by EPA, relevant information from each TMDL is entered into the NTTS by EPA Regional staff.

QA/QC Procedures: QA/QC of data is provided by EPA Regional staff and through cross-checks of WATERS information regarding impaired water listings. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001. EPA requires that organizations prepare a document called a QMP that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies (e.g., those programs involved in the collection or use of environmental data).

Data Quality Review: Internal reviews of data quality have revealed some errors in data and issues associated with the definition of certain database fields. In 2005, EPA convened a meeting of NTTS users to discuss how to improve the database. As a result, data field definitions were clarified, the users' group was reinstituted, and several training sessions were scheduled.

In addition, the EPA Office of the Inspector General recently evaluated the Office of Water, particularly the TMDL Program. The evaluation report, *Sustained Commitment Needed to Further Advance the Watershed Approach,* recognized "EPA has integrated principles of the watershed approach into the Total Maximum Daily Load (TMDL) Program by encouraging States to develop TMDLs on a watershed basis rather than by individual water segments. Stakeholder involvement with TMDLs is critical for both the conventional and watershed approaches, but the broader watershed approach may expand the number of stakeholders. Expanding both the geographic scale and the number of stakeholders may result in additional time and resources required to develop these TMDLs." This demand for resources is challenging to overcome in the current budget environment. The EPA Office of Water has formed a Sustainable Finance Team to increase the capacity of local watershed groups and increase awareness of funding possibilities for watershed work, both from within EPA and outside of the Agency. Finally, the evaluation report states, "regardless of the approach taken for development of TMDLs, the regulatory requirements of the Clean Water Act must be met." Current realization of targets shows the TMDL Program continues to make sizable steps in meeting Clean Water Act goals despite the challenges to taking a watershed approach. EPA plans to evaluate the sufficiency of NTTS in handling watershed-based TMDLs given the increase in the use of this approach.

Data Limitations:
There are usually no gaps in the fields required to identify the TMDLs; however, a number of the fields in NTTS are optional, and population of these fields is erratic.

Error Estimate: No error estimate is currently available for this data.

New/Improved Data Systems: See above.

References:
USEPA, Office of the Inspector General. 2005. *Sustained Commitment Needed to Further Advance the Watershed Approach.* Available at http://www.epa.gov/oig/reports/2005/20050921-2005-P-00025.pdf.

National Research Council, Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction. 2001. *Assessing the TMDL Approach to Water Quality Management.* Washington, DC: National Academy Press.

FY 2007 Performance Measures:

- **Percentage of major NPDES permittees in Significant Noncompliance at any time during the fiscal year (PART measure)**
- **Percentage of all major POTWs that comply with their permitted wastewater discharge standards**

Performance Databases: The Permit Compliance System, (PCS) tracks permit compliance and enforcement data for sources permitted under the Clean Water Act National Pollutant Discharge Elimination System (NPDES). Data in PCS include major permittee self reported data contained in Discharge Monitoring Reports (DMR), data on permittee compliance status, data on state and EPA inspection and enforcement response.

Data Source: Permittee self reported DMR data are entered into PCS by either state or EPA Regional offices. PCS automatically compares the entered DMR data with the pollutant limit parameters specified in the facility NPDES permit. This automated process identifies those facilities which have emitted effluent in excess of permitted levels. Facilities are designated as being in Significant Noncompliance (SNC) when reported effluent exceedances are 20% or more above permitted levels for toxic pollutants and/or 40% or more above permitted levels of conventional pollutants. PCS contains additional data obtained through reports and on-site inspections, which are used to determine SNC, including: non-effluent limit violations such as unauthorized bypasses, unpermitted discharges, and pass through of pollutants which cause water quality or health problems; permit schedule violations; non-submission of DMRs; submission of DMRs 30 or more days late; and violation of state or federal enforcement orders.

Methods, Assumptions and Suitability: There are established computer algorithms to compare DMR effluent data against permitted effluent levels. The algorithms also calculate the degree of permitted effluent exceedance to determine whether toxic/conventional pollutant SNC thresholds have been reached.

QA/QC Procedures: Quality Assurance/Quality Control procedures [See references] are in place for PCS data entry. State and regional PCS data entry staff are required to take PCS training courses [See references]. Quality Management Plans (QMPs) are prepared for each Office within The Office of Enforcement and Compliance Assurance (OECA). The Office of Compliance (OC) has established extensive processes for ensuring timely input, review and certification of PCS information. OC=s QMP, effective for 5 years, was approved July 29, 2003 by the Office of Environmental Information (OEI) and is required to be re-approved in 2008.

Data Quality Review: Information contained in PCS is required by policy to be reviewed by regional and headquarters= staff for completeness and accuracy. SNC data in PCS are reviewed quarterly.

Data Limitations: Legal requirements for permittees to self report data on compliance with effluent parameters in permits generally results in consistent data quality and accuracy. EPA monitors and measures the timeliness of DMR submissions and data entry quality. National trends over the past several years show an average of 94% of DMRs are entered timely and complete. Where data entry problems are observed, OECA works directly with regions and states to improve performance, and in limited circumstances has dedicated supplemental grant

resources to help regions and states correct problems. As part of ICIS-NPDES implementation OECA is working to deploy an electronic DMR process to save resources on data entry workload and reduce data input errors.

Error Estimate: Not available

New & Improved Data or Systems: PCS was developed during the 1980's and has undergone periodic revision and upgrade since then. OECA is currently developing a modernized data system to replace PCS, utilizing modern data entry, storage, and analytical approaches. The first phase of the new system, ICIS-NPDES, is scheduled to be operational March 30, 2006. Until then, all SNC data will be obtained from PCS. During phased implementation of ICIS-NPDES across the states a combination of PCS and ICIS-NPDES will be used to generate SNC data. Once fully implemented, ICIS-NPDES will be the sole source of NPDES SNC data.

FY 2007 Performance Measures:

- **Percentage of (a) State and Territorial, and (b) Tribal water quality standards submissions (received in the 12 month period ending April 30th of the fiscal year) that are approved by EPA. Partial approvals receive fractional credit. (PART measure)**

- **Number of (a) States and Territories, and (b) authorized Tribes, that within the preceding three year period submitted new or revised water quality criteria acceptable to EPA that reflect new scientific information from EPA or other sources not considered in the previous standards. (PART measure)**

Performance Database: The Water Quality Standards Action Tracking Application (WATA), an internal tracking application managed by the Office of Science and Technology described at http://intranet.epa.gov/ost/div/shpd/wata-manual.pdf, is the performance database for these measures. The information in this system yields the baseline and performance data for these measures.

Data Source: The underlying data sources for this measure are the submissions from states, territories, and authorized tribes of water quality standards to EPA pursuant to the Clean Water Act and EPA's water quality standards regulation at 40 CFR part 131. States, territories, and authorized tribes are required to review their water quality standards at least once every three years, and submit any new or revised water quality standards to EPA for review and approval. Each submission is accompanied by a letter from an appropriate official, and includes a certification by the state or territorial attorney general, or equivalent tribal official, that the standards were duly adopted pursuant to state, territorial, or tribal law.

EPA Regional Office staff members compile information from each submission and enter it into the WATA system. The information includes identifying data (name of jurisdiction, date of submission), data concerning components of the submission, and data concerning EPA's action on the submission. EPA has delegated approval and disapproval decisions to the Regional Administrator; the Regional Administrator may re-delegate the decisions to the appropriate

Division Director, but no further. Approval decisions are judicially reviewable, and are accompanied by an appropriate administrative record.

Methods, Assumptions, and Suitability:

The Office of Science and Technology has established computation metrics in the Water Quality Standards Action Tracking Application (WATA) system to produce the baselines and performance data for both measures. These metrics are as follows:

- Percentage of State, Territorial, and Tribal water quality standards submissions (received in the 12 month period ending April 30th of the fiscal year) that are approved by EPA. Partial approvals receive fractional credit.

This metric considers all new or revised submissions from May 1 of the previous year through April 30 of the current year. This reporting period provides regions 150 days to reach and document a valid approval decision. EPA management believes this is an adequate time for processing submissions. A "submission" is determined by the submitting jurisdiction, as described above. The metric then searches for whether the Regional Office has made any approval decision concerning the submission. If EPA approves the submission in full by the end of the reporting period, it will be counted with an approval value of 1. If EPA disapproves all provisions of the standards, it will be counted with an approval value of 0 (zero). In some cases the Regional decision official may decide to approve some portions of the standards provisions, disapprove some portions, or defer actions on some portions. To accommodate these possibilities, and to reflect the complex nature of some submissions, the WATA system allows Regional staff to track portions of a submission as separate parts. When different decisions are reached on different parts of a submission, the metric calculates a fractional approval value. The fractional approval value is a number between 0 and 1, equal to the number of submission parts approved, divided by the total number of parts in the original submission. For example, if a submission is divided up into 5 parts, and EPA approves 3 and disapproves 2, then the metric would count this as 0.6. The final performance metric is the sum of full or fractional approval values divided by the total number of submissions during the reporting period.

- Number of (a) States and Territories, and (b) authorized Tribes, that within the preceding three year period submitted new or revised water quality criteria acceptable to EPA that reflect new scientific information from EPA or other sources not considered in the previous standards

This measure utilizes a Regional Office entry in the WATA system which indicates whether a submission or submission part includes one or more new water quality criteria or revised criteria that reflect new scientific information from EPA or other sources not considered in the previous criteria. Biological criteria that are reflected explicitly in designated uses would count under this entry. If a State, territory, or tribe has not adopted any such criteria, the jurisdiction can nevertheless be counted under this measure if (a) EPA has issued new or revised water quality criteria, including revisions to the published table of EPA recommended criteria at http://www.epa.gov/waterscience/criteria/wqcriteria.html, but the state has determined through a scientific assessment that such a change is not relevant for its waters, or (b) the jurisdiction could

certify to EPA that it has completed a defensible scientific review of the new scientific information EPA has issued and has determined that no changes are needed to their existing water quality criteria. The metric searches for one or more qualifying submissions or submission parts for each jurisdiction during the three-year period ending 150 days before the end of the reporting period, and that have been approved by EPA by the end of the reporting period. For example, for FY 2006 any qualifying submissions from May 1, 2003, through April 30, 2006, that were approved by September 30, 2006, would enable the jurisdiction to be counted. Note the overlap from one reporting year to the next: a state that made such a submittal, in, say, February 2005, would be counted in FY 2005, FY 2006, and FY 2007. Conversely, a state that last adopted such criteria in, say, November 2002, would be counted in FY 2005 but not in FY 2006.

QA/QC Procedures: States, territories, and tribes conduct QA/QC of water quality standards submissions pursuant to individual state procedures. Because such submissions are subject to judicial review, the attorney general's certification described above provides assurance of the content of each submission. EPA regional staffs provide support to and interact with the jurisdictions as they develop, review, and adopt water quality standards. Each Regional Office provides data quality review of its entries in the WATA system. For example, Regional Offices generally assure that each entry is reviewed by the water quality standards coordinator, usually a senior scientist or environmental protection specialist with extensive experience in water quality standards actions. Data validation algorithms built into each entry screen also help improve data quality. In addition, a sample of entries is spot-checked by Headquarters' Office of Science and Technology staff. The Regions and Headquarters have been able to conduct the data quality reviews fairly easily because the number of submissions has averaged about 50 submissions per year in recent years, well within their available resources to provide adequate review.

Data Quality Review: No external reviews of the data have been conducted.

Data Limitations: Submissions may vary considerably in size and complexity. For example, a submission may include statewide water quality standards revisions, use attainability analyses for specific water bodies, site-specific criteria applicable to specific types of waters, general statewide policies, antidegradation policies or procedures, and variances. Therefore, these measures – the number of submissions approved, and the number of jurisdictions with updated scientific information contained in adopted standards – do not provide an indicator of the scope, geographic coverage, policy importance, or other qualitative aspects of water quality standards. This information would need to be obtained in other ways, such as by reviewing the content of adopted and approved standards available at http://www.epa.gov/waterscience/standards/states/, or contacting the appropriate Regional Office or state/territorial/tribal personnel.

Error Estimate: No error estimate is available for this data.

New/Improved Data Systems: The Office of Science and Technology has no immediate plans for developing a new data system or enhancing the existing WATA system, other than refining metrics for assessing and interpreting performance results, or for assessing data quality.

References:

USEPA. September 8, 2005. *Water Quality Standards Acting Tracking Application: Users Manual.* Available at http://intranet.epa.gov/ost/div/shpd/wata-manual.pdf.

USEPA. 2000. *Water Quality Standards Regulation.* Code of Federal Regulations, 40 CFR part 131. Available at http://www.access.gpo.gov/nara/cfr/waisidx_05/40cfr131_05.html.

USEPA. August 1994. *Water Quality Standards Handbook*, 2nd edition. http://www.epa.gov/waterscience/standards/handbook/.

FY 2007 Performance Measure:

- **Estimated annual reduction of nitrogen (reported in pounds), phosphorous (pounds), and sediment (tons) from nonpoint sources to waterbodies (Section 319 funded projects only).**

Performance Database: The Section 319 Grant Reporting and Tracking System (GRTS) is used by grant recipients (State agencies) to supply information about State nonpoint source (NPS) Management and annual Section 319 funded work programs, which include watershed-based / BMP implementation projects. GRTS includes information on NPS load reductions to water bodies of nitrogen, phosphorus and sediments achieved as a result of implementation of Best Management Practices (BMPs) under 319-funded watershed projects.

State reporting via GRTS in part fulfills requirements of the Clean Water Act (CWA) Sections 319(h)(11) and 319(m)(1); however, GRTS also provides EPA and other stakeholders greater and more efficient access to data, information, and program accomplishments than traditional reporting (i.e., hardcopy Annual Reports), as well as provides detailed, geo-referencing (i.e., watershed address, and, now on a much smaller scale, water body segment/reach address) of 319-funded projects and their BMPs, and NPS pollutant load reductions.

GRTS is also becoming part of the "WATERS" framework which is used to summarize water quality information at the watershed (e.g., HUC8) level. The Watershed Assessment Tracking and Environmental Results System (WATERS) is a geographic information system that integrates many existing databases including the STOrage and RETrieval (STORET) database, the National Assessment Database (NAD), the TMDL Tracking System (NTTS), the Water Quality Standards Database (WQSDB), and GRTS.

Data Source: Load reduction data in GRTS are reported by the States and their partners as performance results of Nonpoint Source Management Programs, and Section 319(h) – funded work programs, including individual project work plans. Much of the implementation of §319 work plans (often known as "Project Implementation Plans") involves coordination, funding and installation of on-the-ground BMPs in priority watersheds to reduce pollutant loadings (often as required by established Total Maximum Daily Loads), and to restore the designated uses of impaired waters.

Various computer- and geographic-based models are used in the States to estimate the load reductions resulting from implementation of BMPs in "critical" or hydrologically sensitive areas

within watershed projects. Two models used by several states, and directly supported by EPA, are the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) model, and the "Region 5" model. States, at their discretion, may use other models or methods (e.g., AGNPs, SWAT, GWLF, etc) or may use actual water monitoring data to generate estimates of pollutant load reduction resulting from BMP implementation. The load reduction data generated by modeling and/or monitoring efforts are entered by State GRTS coordinators directly into the appropriate GRTS data fields along with an explanation of the model / methods used to generate the data.

Methods, Assumptions and Suitability: States employ various methods to make pollutant load calculations, including: 1) Predictive models to estimate pollutant loads before and after watershed projects' BMPs are implemented; 2) Direct sampling over time of chemical, physical, and biological parameters using targeted site selection (usually, where impairments have been determined thru 303(d) listing methodology, and often where TMDLs are established); 3) Statistical methods and sampling, such as by paired watershed studies to determine whether or not implemented BMPs in watersheds are reducing NPS pollutant loads and resulting in improved water quality; and, 4) Compilation of data from outside sources such as volunteer monitors, academic institutions, and others that are cited by the States as indirect evidence of pollutant loads, reductions, and water quality.

EPA aggregates the load reduction data entered into GRTS to generate the national performance measure, and incremental (e.g., annual) reports on total load reductions of each parameter – nitrogen, phosphorus, and sediment. The purpose of the aggregation is to provide a very general estimate of load reductions on a nationwide scale. It must be emphasized that this national estimate is not a surrogate for direct measurements of specific waterbody restoration / protection projects in meeting their water quality goals. Such projects' successes can only be assessed through analysis of locally applied BMPs and locally derived monitoring data and locally applied modeling tools.

QA/QC Procedures: QA/QC, of load reduction estimates generated by states and their watershed project cooperators, is dependent on individual state procedures, such as state Quality Management Plans (QMPs) which are periodically reviewed and approved by EPA Regions.

EPA provides guidance and training to states in the use of the STEPL and "Region 5" models. In the provision of guidance and training, EPA emphasizes that Quality Assurance Project Plans (QAPPs) be developed (in accordance with EPA approved State QMPs) for local watershed projects that generate locational information, and data using water quality models and/or water monitoring. EPA also stresses that project- /site- specific parameters be used whenever possible for input to water quality models, as opposed to default input values provided by some modeling tools.

Numerous system level checks are built into the data sources in GRTS, based upon "mandated data" associated with the system. States have continual access and opportunity to review the information in GRTS to ensure it accurately reflects the data they entered (according to their QA procedures). EPA periodically reviews GRTS and reminds states of the critical importance of their completing mandated data elements in a timely, high-quality manner.

Data Quality Review: Data entered in GRTS are periodically reviewed by EPA Regions and Headquarters. Regional personnel also maintain hardcopies of the states work programs / watershed project implementation plans and Annual Progress Reports. Verification of data in GRTS can be cross-checked with these documents to ensure quality, consistency, and reliability in progress reporting on an incremental (such as, year-to-year) basis, or to note any problems in data quality in GRTS. EPA frequently reviews various aggregation(s) of all the data in GRTS by use of "ad-hoc" and standard reports available in the GRTS reporting system.

EPA is working to integrate GRTS into the WATERS framework (and to enable "Ask WATERS") as another means to check states' purported achievements in attaining loading reductions and attaining water quality standards using Section 319(h) funding.

In the past, Nonpoint Source Program reporting under Section 319 had been identified as an Agency-Level weakness under the Federal Managers Financial Integrity Act. The Agency's establishment and subsequent enhancements of GRTS has served to mitigate this problem by requiring states to rigorously identify the projects and activities funded with Section 319(h). In response to the FMFIA evaluation, EPA has been working with states and other stakeholders to improve data input and quality. EPA sponsors national GRTS users group meetings each year. These meetings serve not only to meet the training needs of the user community, but also provide a forum for discussing needed enhancements to GRTS. These enhancements range from better capturing environmental results to improving consistency of data entry to facilitate state-by-state comparisons, and aggregation of state data to the national level.

The CWA Sections 319(h)(11) and 319(m)(1) require States to report their Nonpoint Source Management Program (NPSMP) milestones, nonpoint source pollutant load reductions, and water quality improvements, and these provide the EPA Office of Water (OW) authority to require water quality monitoring, and/or modeling, and reporting by states to demonstrate their success in reducing NPS pollutant loads and improving water quality. OW has issued guidance documents designed to improve states' NPSMP, watershed-based projects and consistency in state progress reporting, including their use of GRTS. These guidance documents include Modifications to Nonpoint Source Reporting Requirements for Section 319 Grants issued in September 2001, which outlines the process for reporting in GRTS applicable Section 319(h) funded projects, load reductions for nutrients and sediment. These modifications remain in effect. Also, the current National Nonpoint Source Program and Grants Guidelines were issued in October, 2003, and this guidance includes sections on all NPS grant reporting requirements, including GRTS reporting. Subsequent to issuing these guidelines, EPA, in consultation with the States, established the specific nonpoint source program activity measures (PAMs), including nonpoint load reductions, which are now part of EPA's Strategic Plan, the OMB Program Assessment Rating Tool ("OMB PART"), and the National Water Program Guidance. EPA has also communicated (e.g., via email) to states further detailed explanations of the NPS program activity measures, expected reporting sources and dates, and results of the Agency's reviews of data input to GRTS by the states.

Data Limitations: State NPSMP work to model (and monitor) watersheds is often not coordinated with state water quality monitoring and assessment strategies, and therefore the integration of GRTS and other data systems' data may be rather limited Load reduction data are

typically generated from the use of water quality models, and there is a great deal of uncertainty in model inputs and outputs. States generally do not apply model results / load reductions to decision–making for implementing and/or revising their NPS Management Programs, nor do they apply it to other relevant decisions, such as 305(b) assessment and 303(d) listing. The results generated by computer models versus direct monitoring are generally not very comparable.

EPA is working with states to provide a data structure in GRTS as well as in the web-Reach Indexing Tool (web-RIT) that make it easier for project BMPs to be geographically located so that resulting load reductions and water quality changes can be more easily tracked over time. WATERS would provide an integrating framework for watershed / water quality information at the national level. However, there are challenges in how BMPs are (or can be) tracked in GRTS. For example, Section 319 funded projects result in the implementation of many thousands of BMPs as well as other 319 project activities; but it may not be feasible to track each of these activities in GRTS. Most of the load reductions in GRTS are linked to the 319 award fiscal year rather than an implementation data, which is not useful for reporting incremental load reductions. Furthermore, it is difficult to capture a given year of load reductions for multi-year projects funded under single (or multiple) grant fiscal year(s).

State assessments of load reductions and water quality typically include uncertainties associated with any measuring or modeling tools. Variability in the environment, as well as in state methods and application of tools limit the accuracy of data for describing load reductions and water quality at the project level. Aggregating the load reduction data up to the national measure compounds the level of uncertainty, thereby preventing the Agency from assigning a reasonable numerical confidence level to it.

Error Estimate: No error estimate is available for these data.

New/Improved Data or Systems: GRTS is currently undergoing a transition from a Lotus Notes-based system to an Oracle database. Oracle is the standard database used by Federal agencies. Conversion to Oracle will allow GRTS to seamlessly connect to other EPA OW data systems, e.g., web-RIT, STORET, NTTS, WQSDB – all systems under the WATERS framework, as well as potential linkages to a variety of other Federal and State databases, models, and watershed planning and accountability tools. In this framework, the Oracle-based GRTS will greatly improve reporting capabilities for all end users, and answer questions for stakeholders, such as, where are watershed projects being developed and implemented? Are projects coincident with impaired waters and established TMDLs? Do they pursue actions necessary to reduce pollutant loads and attain water quality standards? Oracle provides users the capability of customizing data entry screens to facilitate various reporting needs of the States and EPA. Customized screens can reflect the various programmatic needs of the Regional offices and States, such as to review/input only the mandated elements and program measures, a mix of mandated elements, and/or other Regionally required data fields.

References:

AGNP – Agricultural Nonpoint Source Pollution Model

SWAT – Soil Water Assessment Tool Model

GWLF – Generalized Watershed Loading Functions Model

STEPL – Spreadsheet Tool for Estimating Pollutant Load Model

Region 5 Model – A model which uses some long-used equations to help determine load reductions (such as the Revised Universal Soil Loss Equation, the Gully Erosion Equation, and the Channel Erosion Equation)

Modification to NPS Reporting Requirements for Section 319 Grants (September 2001)

National Nonpoint Source Program and Grants Guidelines (October 2003)

FY 2007Performance Measures:

- **Percentage of high priority EPA and State NPDES permits that are reissued as scheduled (PART Measure)**

- **Percentage of high priority state NPDES permits issued as scheduled (PART Measure)**

Performance Database:

- U.S. EPA. Permit Compliance System (PCS). [database]. Washington, DC [Office of Enforcement and Compliance Assurance]
- Permit Issuance Forecasting Tool (PIFT) [database]. Washington, DC [Office of Water]
- Priority Permits Data Base. [web-based database]. Washington, DC [Office of Water]

The Permit Compliance System (PCS) is used to determine which individual permits are current through date fields for permit issuance and expiration. EPA has carried out detailed permit renewal backlog tracking with PCS data since November 1998. To supplement the individual permit data from PCS, EPA uses the Permit Issuance Forecasting Tool (PIFT) to track the current or expired status of facilities covered under non-storm water general permits. The PIFT has been used to track non-storm water general permit facilities since January 2001.

EPA has undertaken a new "priority permits" issuance strategy that focuses permitting activities on significant expired permits. The Priority Permits Database is a web-based system that tracks the specific permits that each State and Region has identified as priority. States and Regions enter the permits, and EPA HQ uses PCS to track permit issuance status of these permits.

Data Source: EPA=s Regional offices and NPDES authorized states enter data into PCS. EPA=s Regional offices are responsible for entering data to the PIFT. EPA's Regional offices and States enter permit identification information into the Priority Permits database.

Methods, Assumptions and Suitability: For individual permits, monthly reports are generated from PCS that use permit issuance and expiration dates to aggregate, across each state, the number of major and minor permits which have not exceeded expiration dates by more than 180 days. Permits that have not reached their expiration date, or are less than 180 days past that date, are considered Acurrent.@ Permits that have not been renewed within 180 days of expiration are considered Aexpired@ or Abacklogged.@ Although PCS tracks some data for facilities covered by NPDES non-storm water general permits, States and Regions are not required to input these data; thus, the data are incomplete and unreliable. To fill this data gap, EPA developed the PIFT tracking system to gather basic counts of facilities covered by current and expired non-storm water general permits. Further, to complement tracking of all permits, the Priority Permits Database was developed to track the status of high priority permits. Together the PCS, PIFT and Priority Permits data are intended to measure NPDES program coverage. The data are suitable for year -to-year comparisons of officially tracked permit status.

QA/QC Procedures: The PCS database is managed by the Office of Enforcement and Compliance Assurance (OECA); PIFT and Priority Permits Database are managed by the Office of Water (OW). EPA Headquarters (HQ) staff in OECA review data submitted by states as part of the QA/QC process. In addition, OW continues to work with States and Regions to improve the quality and completeness of the data. EPA generates state-by-state reports that list PCS Akey data@ fields, including permit issuance and expiration dates, as well as compliance and enforcement data, and provides these lists to NPDES states and Regions for review and cleanup. EPA also created a spread sheet comparing latitude/longitude (lat/long) data for municipal treatment systems collected by the Clean Water Needs Survey to the lat/long data in PCS. This spread sheet is provided to States and Regions so that, where discrepancies exist between state and PCS data, EPA and States can make corrections in PCS. EPA will continue to focus on improving the lat/long data in PCS, especially at the pipe level.

Additionally, where States maintain Akey@ permit data in separate state-level systems, EPA is providing support to upload these data to PCS.

Regions enter data into the PIFT and Priority Permits database, both of which are web-based systems maintained by OW.

Data Quality Review: The Office of Inspector General (OIG) has issued several findings regarding poor PCS data quality, and PCS has been listed as an Agency-Level Weakness under the Federal Managers Financial Integrity Act since 1999. This weakness affects EPA=s ability to obtain a true picture of the status of the NPDES program. Fortunately, the permit issuance and expiration data needed for this performance measure are generally better populated than other Akey@ data elements. As noted previously, OW is offering support to States for data upload, data entry, and, if necessary, data compilation to improve data quality. The replacement of PCS with ICIS-NPDES, a modernized and user-friendly NPDES data system, is scheduled for the first wave release to EPA and some direct user states in March 2006; other states will be migrated to

the new system in additional waves (the third phase to complete all direct users is scheduled for August 2006; batch states will follow), and should greatly increase state participation and data quality.

Data Limitations: EPA is aware of data gaps in PCS, particularly for minor facilities, and is aware of discrepancies between state databases and PCS; however, EPA=s data clean-up over the past five years has significantly improved data quality. The PIFT has enabled EPA to report on non-storm water facilities covered by NPDES general permits, but the data are not as comprehensive as those tracked in PCS. In 2006, EPA is upgrading PIFT for EPA-issued permits to improve inventory tracking. There are no national-level data to track permit issuance and expiration status of facilities covered by storm water general permits; thus, they are not tracked under this performance measure. Priority Permits data are verified and reliable.

Error Estimate: We believe that the permit renewal backlog data for major facilities is accurate within 2 percent based on input from EPA=s Regional offices and states through a quarterly independent verification. For minor facilities, however, the confidence interval is less precise and probably overestimates the permit renewal backlog for minor facilities by 5 percent based on anecdotal information from EPA=s Regional offices and states.

New/Improved Data or Systems: EPA headquarters is providing contractor assistance to improve the data quality in PCS. The new modernized ICIS-NPDES will be rolled out starting in March 2006. ICIS –NPDES will be easier to use and will improve the quality of data needed to manage the NPDES program.

References:

PCS information is publicly available at:
http://www.epa.gov/compliance/planning/data/water/pcssys.htm

FY 2007 Performance Measures:

- **Loading (Pounds) of pollutants removed per program dollar expended (PART efficiency measure)**

Performance Database: This measure is calculated using a variety of methods. For point sources in industry sectors with effluent guidelines, a spread sheet is used. An average Aper facility@ pollutant reduction value is assigned to each permitted effluent discharger according to the effluent guideline developed in each industrial sector. Using both the average per facility value and the number of permits issued as reported under PCS, the spreadsheet then generates the values for the total pollutants reduced.

The above calculation is used in combination with another spread sheet[19] to summarize pollutant reductions achieved through controls at Combined Sewer Overflows (CSOs), Publicly Owned Treatment Works (POTWs), and controls for municipal storm water and construction storm

[19] SWP Efficiency: Millions of Pounds Removed [unpublished Excel Spread Sheet]. (April, 2005). Washington, D.C.: United States Environmental Protection Agency [Office of Water].

water. Industrial storm water is not included nor are reductions from water quality based effluent limits.

CSOs: CSO pollutant reductions are estimated in the 2001 and 2003 CSO Reports to Congress[20].

Comment [MSOffice1]: The CSO database does not include information on municipal or construction storm water.

POTWs: Estimated reductions from POTWs were calculated using data from a detailed trend analysis for Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) loadings in "Progress in Water Quality: An Evaluation of the National Investment in Municipal Wastewater Treatment[21]." The report provides flow estimates, loading estimates and a distribution of treatment class for every 2 to 4 years from 1968 through 1996. In addition, the report uses data from the Clean Watershed Needs Survey (CWNS)[22] to provide projections for 2016. EPA has also prepared a 2004 update for Chapter Two[23] of the 2000 "Progress in Water Quality."

Municipal Storm Water: Estimates from municipal storm water were derived from EPA models of the volume of storm water discharged from municipal separate storm sewer systems (MS4s) developed as part of a 1997 EPA draft report. The methodology and results of the 1997 draft report are described in AEconomic Analysis of the Final Phase II Storm Water Rule@, EPA, October 1999.[24]

Construction Storm Water: EPA developed estimates of the sediment load present in construction storm water using a model developed by the US Army Corps of Engineers. The model uses the construction site version of the Revised Universal Soil Loss Equation (RUSLE). Uncontrolled (i.e. prior to implementation of Best Management Practices (BMPs)) and controlled (i.e. after the implementation of BMPs) sediment loadings were estimated for 15 climatic regions with three site sizes (one, three, and five acres), three soil erodibility levels (low, medium, and high), three slopes (3%, 7%, and 12%), and various BMP combinations. The methodology and results are described in "Economic Analysis of the Final Phase II Storm Water Rule."

The values derived from the above methods are summed to obtain the total pollutant load reductions achieved under the surface water program.

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[20] *2003 CSO Report to Congress*, August 2004, US EPA;
Available at: http://cfpub.epa.gov/npdes/cso/cpolicy_report2004.cfm

[21] *Progress in Water Quality: An Evaluation of the National Investment in Municipal Wastewater Treatment* (EPA-832-R-00-008; June 2000). Available at: http://www.epa.gov/owm/wquality/benefits.htm.

[22] Clean Watershed Needs Survey 2000 [Electronic data base]. (2000). Washington, D.C. U.S. Environmental Protection Agency [Office of Wastewater Management].

[23] 2004 update of Chapter 2, "Nationwide Trends in BOD Loading Based on Population and POTW Treatment Design" of the report, *Progress in Water Quality: An Evaluation of the National Investment in Municipal Wastewater Treatment.*

[24] Economic Analysis of the Final Phase II Storm Water Rule, Oct. 1, 1999, US EPA. Available at: http://www.epa.gov/npdes or http://cfpub.epa.gov/npdes/docs.cfm?program_id=6&view=allprog&sort=name

To calculate the PART efficiency measure, the total cumulative pollutant reductions were divided by the total number of dollars devoted to the EPA Surface Water Program (SWP), grants to States under Clean Water Act (CWA) section 106, plus State 'match' dollars, annually. SWP and CWA Section 106 budget is pulled from EPA's Integrated Financial Management System (IFMS). State 'match' dollars are reported to EPA by States.

Data Sources: For industrial sector permits, each EPA Regional office reports the actual number of permits issued in the past year, typically drawn from EPA=s Permit Compliance System. For direct dischargers subject to effluent guidelines, the average per facility value for pollutant reduction is derived from the Technical Development Documents (TDDs) produced at the time of the effluent guideline (ELG) rulemaking. TDDs are available for: Pulp & Paper, Pharmaceuticals, Landfills, Industrial Waste Combustors, Centralized Waste Treatment, Transportation Equipment Cleaning, Pesticide Manufacturing, Offshore Oil & Gas, Coastal Oil & Gas, Synthetic Based Drilling Fluid, Concentrated Animal Feeding Operations, Meat and Poultry, Metal Products and Machinery, Aquaculture. Regarding PCS, States and EPA=s Regional offices enter data into the system.

CSO loadings are estimated based on data obtained from the Clean Watershed Needs Survey and from the "Report to Congress on the Impacts and Control of Combined Sewer Overflows and Sanitary Sewer Overflows." States and EPA=s Regional offices provide data for the CSO Report to Congress and the Clean Watershed Needs Survey.

Methods, Assumptions and Suitability: EPA uses the spreadsheets described above to estimate loadings. The data are aggregated across different sources to determine loading reductions at the national level. Loadings appear to be the best surrogate for determining the environmental impacts of point sources. Pollutant load reductions, along with some of the water quality improvement measures, tell the story about environmental outcomes. Pollutant reductions per dollar spent provides a snapshot of the effectiveness and efficiency of the surface water program, and comparing this over time helps to delineate a trend.

QA/QC Procedures: The loadings spreadsheets are based on information from rulemakings and policies that have undergone extensive review. The effluent guidelines follow EPA quality assurance/quality control (QA/QC) procedures. The PCS database is managed by the Office of Enforcement and Compliance Assurance (OECA). EPA Headquarters (HQ) staff in OECA review data submitted by states as part of the QA/QC process. (See full description under "current permits" measure).

Data Quality Reviews: The Office of Inspector General (OIG) has issued several findings regarding poor PCS data quality, and PCS has been listed as an Agency-Level Weakness under the Federal Managers Financial Integrity Act since 1999. This weakness affects EPA=s ability to obtain a true picture of the status of the NPDES program. Fortunately, the permit issuance and expiration data needed for this performance measure are generally better populated than other Akey@ data elements. As noted previously, OW is offering support to States for data upload, data entry, and, if necessary, data compilation support to improve data quality. The replacement of PCS with ICIS-NPDES, a modernized and user-friendly NPDES data system, is scheduled for

the first wave release to EPA and some direct user states in March 2006; other states will be migrated to the new system in additional waves (the third phase to complete all direct users is scheduled for August 2006; batch states will follow), and should greatly increase state participation and data quality.

Recently, the EPA IG issued a report on effluent guidelines.[25] The IG recommendations pointed to an inability to confirm our estimates of reductions. As part of OW's response to the IG, we point to the annual performance measures as an effective way to describe the accomplishments of the effluent guidelines program.

Data Limitations: There is inconsistent and poor data quality in the PCS data base with respect to flow and discharge monitoring, including missing data for minor facilities which has not been required to be entered. Neither monitoring nor flow data are required for certain categories of general permits. The Agency, therefore, is not able to provide sufficient information to measure loadings reductions for all of the approximately 550,000 facilities that fall under the NPDES program. The effluent guidelines loadings are estimates based the number of permits issued across an industrial sector.

Error Estimate: At this time we are unable to estimate error due to the lack of actual national level data to compare to estimates based on models.

New/Improved Data or Systems: EPA headquarters is providing contractor assistance to improve the data quality of PCS. PCS is scheduled to be replaced by ICIS-NPDES which will be easier to use and will ensure that it includes needed data to manage the NPDES program. See full write-up under the "current permits" measures.

EPA continues to evaluate and explore methods for calculating loadings reductions nation-wide from all sources.

References:

Clean Watershed Needs Survey 2000 [Electronic data base]. (2000). Washington, D.C. U.S. Environmental Protection Agency [Office of Wastewater Management].

Effluent guidelines development documents are available at:
http://www.epa.gov/waterscience/guide.

Modeling databases and software being used by the Office of Water are available at:
http://www.epa.gov/water/soft.html

PCS information is publicly available at:
http://www.epa.gov/compliance/planning/data/water/pcssys.html

FY 2007 Performance Measure:

[25] *Effectiveness of Effluent Guidelines Program for Reducing Pollutant Discharges Uncertain* Report No. 2004-P-00025, August 24, 2004. Available at: http://www.epa.gov/oig/reports/2004/20040824-2004-P-00025.pdf

- **Clean Water State Revolving Fund (CWSRF) Long-Term Revolving Level ($billions/yr)**
- **Fund utilization rate for the CWSRF.**

Performance Database: Clean Water State Revolving Fund National Information Management System (NIMS.)

Data Sources: Data are from reporting by municipal and other facility operators, state regulatory agency personnel and by EPA's regional staff. Data are collected and reported once yearly.

Methods, Assumptions and Suitability: Data entered into NIMS are the units of performance. These data are suitable for year-to-year comparison and trend indication.

QA/QC Procedures: EPA's headquarters and regional offices are responsible for compiling the data and querying states as needed to assure data validity and conformance with expected trends. States receive data entry guidance from EPA headquarters in the form of annual memoranda. A generic memorandum would be titled: "Request for Annual Update of Data for the Clean Water State Revolving Fund National Information Management System, July 1, 200X through June 30, 200X."

Data Quality Reviews: EPA's headquarters and regional offices annually review the data submitted by the states. These state data are publicly available at http://www.epa.gov/owm/cwfinance/cwsrf in individual state reports. EPA's headquarters addresses significant data variability issues directly with states or through the appropriate EPA regional office. An annual EPA headquarters' "N IMS Analysis" provides detailed data categorization and comparison. This analysis is used during annual EPA regional office and state reviews to identify potential problems which might affect the performance measure, biennial reviews by EPA's headquarters of regional oversight of state revolving funds and, annual reviews by EPA's regional offices of their states' revolving funds operations.

State data quality is also evaluated during annual audits performed by independent auditors or by the appropriate regional office of the EPA Inspector General. These audits are incorporated into EPA headquarters' financial management system.

Data Limitations: There are no known limitations in the performance data, which states submit voluntarily. Erroneous data can be introduced into the NIMS database by typographic or definitional error. Typographic errors are controlled and corrected through data testing performed by EPA's contractor. Definitional errors due to varying interpretations of information requested for specific data fields have been virtually eliminated in the past two years as a result of EPA headquarters' clarification of definitions. These definitions are publicly available at: http://www.epa.gov/owm/cwfinance/cwsrf. There is typically a lag of approximately two months from the date EPA asks states to enter their data into the NIMS database, and when the data are quality-checked and available for public use.

Error Estimate: Due to the rapid growth of this program, past estimates of annual performance (relative to a target), compared to actual performance data received two years later, have been accurate to an average of approximately plus or minus2 percentage points.

New/Improved Data or Systems: This system has been operative since 1996. It is updated annually, and data fields are changed or added as needed.

References:
State performance data as shown in NIMS are available by state at:
http://www.epa.gov/owm/cwfinance/cwsrf
Definitions of data requested for each data field in NIMS is available at:
http://www.epa.gov/owm/cwfinance/cwsrf
The Office of Water Quality Management Plan, July 2001 (approved September 28, 2001) addresses the quality of data in NIMS. Not publicly available.

FY 2007 Performance Measure:

- **Reduction in the number of homes on tribal lands lacking access to basic sanitation**

Performance Database: Sanitation Tracking and Reporting System (STARS), the Indian Health Service (IHS), Office of Environmental Health and Engineering (OEHE), Division of Sanitation Facilities Construction (DSFC).

Data Sources: The STARS includes data on sanitation deficiencies, Indian homes and construction projects. STARS is currently comprised of two sub data systems, the Sanitation Deficiency System (SDS) and the Project Data System (PDS).

The SDS is an inventory of sanitation deficiencies for existing Indian homes and communities. The IHS is required to prioritize SDS deficiencies and annually report to Congress. The identification of sanitation deficiencies can be made several ways, the most common of which follow:

- Consultation with Tribal members and other Agencies
- Field visits by engineers, sanitarians, Community Health Representatives (CHRs), nurses, or by other IHS or tribal heath staff
- Sanitary Surveys
- Community Environmental Health Profiles
- Bureau of Indian Affairs (BIA) Inventory
- Census Bureau Reports (for comparison purposes only)
- Tribal Master Plans for Development
- Telephone Surveys
- Feasibility Studies

The most reliable and preferred method is a field visit to each community to identify and obtain accurate numbers of homes with sanitation deficiencies. The number of Indian homes within the communities must be consistent among the various methods cited above. If a field visit cannot

be made, it is highly recommended that more than one method be used to determine sanitation deficiencies to increase the accuracy and establish greater credibility for the data.

The PDS is a listing of funded construction projects and is used as a management and reporting tool.

QA/QC Procedures: Quality assurance for the Indian country water quality performance measure depends on the quality of the data in the STARS. The STARS data undergoes a series of quality control reviews at various levels within the IHS DSFC. The DSFC is required to annually report deficiencies in SDS to Congress in terms of total and feasible project costs for proposed sanitation projects and sanitation deficiency levels for existing homes.

Data Quality Reviews: The SDS data initially undergoes a series of highly organized reviews by experienced tribal, IHS field, IHS district and IHS area personnel. The data are then sent to the DSFC headquarters office for review before final results are reported. The DSFC headquarters reviews the SDS data for each of the 12 IHS area offices. The data quality review consists of performing a number of established data queries and reports which check for errors and/or inconsistencies. In addition, the top 25 SDS projects and corresponding community deficiency profiles for each area are reviewed and scrutinized thoroughly. Detailed cost estimates are highly encouraged and are usually available for review.

Data Limitations: The data are limited by the accuracy of reported data in STARS.

Error Estimate: The IHS DSFC requires that higher-level projects (those with the possibility of funding prior to the next update) must be developed to allow for program implementation in an organized, effective, efficient manner. Those SDS projects (top 20%) must have cost estimates within 10% of the actual costs.

New/Improved Data or Systems: The STARS is a web based application and therefore allows data to be continuously updated by personnel at various levels and modified as program requirements are identified. PDS has been modified to meet 40CFR31.40 reporting requirements. In 2006 STARS is being modified to include rural communities that are not Alaska Native Villages but has a substantial Alaska Native population.

References:

1. Indian Health Service (IHS), Division of Sanitation Facilities (DSFC). Criteria for the Sanitation Facilities Construction Program, June 1999, Version 1.02, 3/13/2003. http://www.dsfc.ihs.gov/Documents/Criteria_March_2003.cfm

2. Indian Health Service (IHS), Division of Sanitation Facilities (DSFC). Sanitation Deficiency System (SDS), Working Draft, "Guide for Reporting Sanitation Deficiencies for Indian Homes and Communities", May 2003. http://www.dsfc.ihs.gov/Documents/SDSWorkingDraft2003.pdf

FY 2007 Performance Measures:

- **Prevent water pollution and protect aquatic systems so that overall aquatic system health of coastal waters nationally, and in each coastal region, is improved on the "good/fair/poor" scale of the National Coastal Condition Report**

Performance Database: EMAP/NCA [Environmental Monitoring and Assessment Program/National Coastal Assessment] database (housed EPA/ORD/NHEERL/AED, Narragansett, RI)(Environmental Protection Agency/Office of Research and Development/National Health and Environmental Effects Research Laboratory/Gulf Ecology Division); pre-database information housed in ORD/NHEERL facility in Gulf Breeze, FL (Gulf Ecology Division) (pre-database refers to a temporary storage site for data where they are examined for QA purposes, have appropriate metadata attached and undergo initial statistical analyses); data upon QA acceptance and metadata completion are transferred to EMAP/NCA database and are web available at www.epa.gov/emap/nca.

Data Source: Probabilistic surveys of ecological condition completed throughout the Mid-Atlantic and Gulf of Mexico by EPA's Office of Research and Development (ORD) in 1991-1994, in southern Florida in 1995, in the Southeast in 1995-1997, in the Mid-Atlantic in 1997-1998, in each coastal state in 2000-2004 (except Alaska and Hawaii), in Alaska in 2002 and 2004, in Hawaii in 2002 and 2004, and in Puerto Rico in 2000 and 2004, and in other island territories (Guam, American Samoa and U.S. Virgin Islands) in 2004. Surveys collect condition information regarding water quality, sediment quality and biotic condition at 70-100 sites/region (e.g., mid-Atlantic) each year of collection prior to 1999 and at 35-150 sites in each state or territory/year (site number dependent upon state) after 1999. Additional sampling by the National Estuary Program (NEP) included all individual national estuaries; the total number of sites within NEP boundaries was 30 for the two-year period 2000-2003.

These data are collected through a joint EPA-State cooperative agreement and the States follow a rigid sampling and collection protocol following intensive training by EPA personnel. Laboratory processing is completed at either a state laboratory or through a national EPA contract. Data collection follows a Quality Assurance Project Plan (QAPP) (either the National Coastal QAPP or a variant of it) and QA testing and auditing by EPA.

Methods, Assumptions and Suitability: The surveys are conducted using a probabilistic survey design which allows extrapolation of results to the target population (in this case - all estuarine resources of the specific state.) The collection design maximizes the spatial spread between sites, located by specific latitude-longitude combinations. The survey utilizes an indexed sampling period (generally late summer) to increase the probability of encountering water quality, sediment quality and biotic condition problems, if they exist. Based on the QAPP and field collection manual, a site in a specific state is located by sampling vessel via Global Positioning System (GPS) and water quality is measured on board at multiple depths. Water samples are taken for chemistry; sediment samples are taken for chemistry, toxicity testing and benthic community assessment; and fish trawls are conducted to collect community fish data and provide selected fish (target species) for analysis of whole body and/or fillet contaminant concentrations. Samples are stored in accordance with field manual instructions and shipped to

the processing laboratory. Laboratories follow QA plans and complete analyses and provide electronic information to the state or EPA. EPA and the state exchange data to ensure that each has a complete set. EPA analyzes the data to assess regional conditions, whereas the states analyze the data to assess conditions of state-specific waters. Results of analyses on a national and regional basis are reported as chapters in the National Coastal Condition Report (NCCR) series. The overall regional condition index is the simple mean of the five indicators' scores used in the Coastal Condition Report (in the NCCR2 a recalculation method was provided for direct comparison of the successive reports). An improvement for one of the indicators by a full category unit over the eight year period will be necessary for the regional estimate to meet the performance measurement goal (+0.2 over an eight year period).

Assumptions: (1) The underlying target population (estuarine resources of the United States) has been correctly identified; (2) GPS is successful; (3) QAPP and field collection manuals are followed; (4) all samples are successfully collected; (5) all analyses are completed in accordance with the QAPP; and (6) all combinations of data into indices are completed in a statistically rigorous manner.

Suitability: By design all data are suitable to be aggregated to the state and regional level to characterize water quality, sediment quality, and biotic condition. Samples represent "reasonable", site-specific point-in-time data (not primary intention of data use) and an excellent representation of the entire resource (extrapolation to entire resource supportable). The intended use of the data is the characterization of populations and subpopulations of estuarine resources through time. The data meet this expectation and the sampling, response, analysis and reporting designs have been peer reviewed successfully multiple times. The data are suitable for individual calendar year characterization of condition, comparison of condition across years, and assessment of long-term trends once sufficient data are collected (7-10 years). Data are suitable for use in National Coastal Condition calculations for the United States and its regions to provide performance measurement information. The first long-term trends analysis will appear in the 2006 NCCR representing trends between 1990-2004.

QA/QC Procedures: The sampling collection and analysis of samples are controlled by a Quality Assurance Project Plan (QAPP) [EPA 2001] and the National Coastal Assessment Information Management Plan (IMP)[EPA 2001]. These plans are followed by all twenty-three coastal states and 5 island territories. Adherence to the plans are determined by field training (conducted by EPA ORD), field audits (conducted by EPA/ORD), round robin testing of chemistry laboratories (conducted by EPA/ORD), overall systems audits of state programs and national laboratory practices (conducted by EPA), sample splits (sent to reference laboratories), blind samples (using reference materials) and overall information systems audits (conducted by EPA/ORD). Batch sample processing for laboratory analyses requires the inclusion of QA samples in each batch. All states are subject to audits at least once every two years. All participants received training in year 2000 and retraining sessions are scheduled every two years.

Data Quality Reviews: Data quality reviews have been completed in-house by EPA ORD at the regional and national level in 2000-2003 (National Coastal Assessment 2000-2003) and by the Office of Environmental Information (OEI) in 2003 (assessment completed in June, 2003 and written report not yet available; oral debriefing revealed no deficiencies). No deficiencies were

found in the program. A national laboratory used in the program (University of Connecticut) for nutrient chemistry, sediment chemistry and fish tissue chemistry is being evaluated by the Inspector General's Office for potential falsification of laboratory results in connection with other programs not related to NCA. The NCA has conducted its own audit assessment and only one incorrect use of a chemical digestion method for inorganic chemistry samples (metals) was found. This error was corrected and all samples "digested" incorrectly were reanalyzed at no cost.

Data Limitations: Data limitations are few. Because the data are collected in a manner to permit calculation of uncertainty and designed to meet a specific Data Quality Objective (DQO) (<10% error in spatial calculation for each annual state estimate), the results at the regional level (appropriate for this performance measure) are within about 2- 4% of true values dependent upon the specific sample type. Other limitations as follows: (a) Even though methodology errors are minimized by audits, in the first year of the NCA program (2000) some errors occurred resulting in loss of some data. These problems were corrected in 2001 and no problems have been observed since. (b) In some instances, (<5%) of sample results, QA investigation found irregularities regarding the precision of measurement (e.g., mortality toxicity testing of controls exceeded detection limit, etc.). In these cases, the data were "flagged" so that users are aware of the potential limitations. (c) Because of the sampling/ analysis design, the loss of data at a small scale (~ 10%) does not result in a significant increase in uncertainty in the estimate of condition. Wholesale data losses of multiple indicators throughout the U.S. coastal states and territories would be necessary to invalidate the performance measure. (d) The only major source of external variability is year-to-year climatic variation (drought vs. wet, major climatic event, etc.) and the only source of internal variation is modification of reporting indicators (e.g., new indices, not a change in data collected and analyzed). This internal reporting modification requires a re-analysis of earlier information to permit direct comparison. (e) There is generally a 2-3 year lag from the time of collection until reporting. Sample analysis generally takes one year and data analysis another. Add another year for report production and peer review. (f) Data collections are completed annually; The EPA/ORD data collection collaboration will continue through 2004. After 2004, ORD will assist OW, as requested, with expert advice, but will no longer support the program financially.

Error Estimate: The estimate of condition (upon which the performance measure is determined) has an annual uncertainty rate of about 2-3% for national condition, about 5-7% for individual regional indicators (composite of all five states data into a regional estimate), and about 9-10% for individual state indicators. These condition estimates are determined from the survey data using cumulative distribution functions and the uncertainty estimates are calculated using the Horvitz-Thompson estimator.

New/Improved Data or Systems:

(1) Changes have occurred in the data underlying the performance measure based on scientific review and development. A change in some reporting indicators has occurred in order to more accurately represent the intended ecological process or function. For example, a new eutrophication index was determined for the 2000 data. In order to compare this new index to the 1991-1994 data, the earlier data results must be

recomputed using the new technique. This recalculation is possible because the underlying data collection procedures have not changed.

(2) New national contract laboratories have been added every year based on competition. QA requirements are met by the new facilities and rigorous testing at these facilities is completed before sample analysis is initiated. QA adherence and cross-laboratory sample analysis has minimized data variability resulting from new laboratories entering the program.

(3) The only reason for the discontinuation of the National performance goal would be the elimination of the surveys after 2004 or any other year thereafter.

In order to continue to utilize the 2001 National Coastal Condition report as the baseline for this performance measure, the original scores reported in 2001 have been re-calculated in the 2004 report using the index modifications described above (#1). These "new" results for the baseline (re-calculated scores) are reported in Appendix C of the 2005 report.

References:

1. Environmental Monitoring and Assessment Database (1990-1998) and National Coastal Assessment Database (2000- 2004) websites: www.epa.gov/emap and www.epa.gov/emap/nca (NCA data for 2000 is only data available at present)
2. National Coastal Assessment. 2000-2003. Various internal memoranda regarding results of QA audits. (Available through John Macauley, National QA Coordinator NCA, USEPA, ORD/NHEERL/GED, 1 Sabine Island, Gulf Breeze, FL 32561)
3. National Coastal Assessment. 2001. Quality Assurance Project Plan. EPA/620/R-01/002.(Available through John Macauley above)
4. National Coastal Assessment. 2001. Information Management Plan. EPA/620/R-01/003 (Available through Stephen Hale, NCA IM Coordinator, ORD/NHEERL/AED, 27 Tarzwell Drive, Narragansett, RI)
5. U.S. Environmental Protection Agency. 2001. National Coastal Condition Report. EPA-620/R- 01/005.
6. U.S. Environmental Protection Agency. 2004. National Coastal Condition Report II. In review Assigned Report Number EPA-620/R-03/002.

GOAL 2 OBJECTIVE 3

FY 2007 Performance Measure:

- **Report on the conditions and seasonal trends of water quality in the Gulf of Mexico hypoxic zone**

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

FY 2007 Performance Measure:

- **Percentage of planned outputs delivered in support of Six Year Review decisions (PART Measure)**

- **Percentage of planned outputs delivered in support of Contaminated Candidate List decisions (PART Measure)**

Performance Database: EPA will track these program outputs annually using an internal data base.

Data Source: The source of data will be a contractor-produced client document analysis, detailing client use of the Drinking Water Research Program's products by the EPA's Office of Water.

Methods, Assumptions and Suitability: The primary indicator of output, or productivity, is calculation of the percentage of ORD-developed products by research theme appearing in client produced (or secondary client-produced) documents, website content, formal communications, regulations, rules, decisions, recommendations, and other tangible evidence over a five year period, as identified through content analysis.

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References:

Bibliography of EPA's Drinking Water Research Program, product publication list. Calendar years 2000-2004.

GOAL 3 OBJECTIVE 1

FY 2007 Performance Measures:

- **Daily per capita generation**
- **Millions of tons municipal solid waste diverted**

Performance Database: Data are provided by the Department of Commerce. EPA does not maintain a database for this information.

Data Source: The baseline numbers for municipal solid waste (MSW) source reduction and recycling are developed using a materials flow methodology employing data largely from the Department of Commerce and described in the EPA report titled "Characterization of Municipal Solid Waste in the United States." The Department of Commerce collects materials production and consumption data from various industries.

Methods, Assumptions and Suitability: Data on domestic production of materials and products are compiled using published data series. U.S. Department of Commerce sources are used, where available; but in several instances more detailed information on production of goods by end-use is available from trade associations. The goal is to obtain a consistent historical data series for each product and/or material. Data on average product lifetimes are used to adjust the data series. These estimates and calculations result in material-by-material and product-by-product estimates of MSW generation, recovery, and discards. To strategically support attainment of the 35% recycling goal, EPA has identified specific components of the MSW stream on which to focus: paper and paperboard, organics (yard and food waste), and packaging and containers. For these targeted efforts EPA will examine data on these waste components.

There are various assumptions factored into the analysis to develop estimates of MSW generation, recovery and discards. Example assumptions (from pages 141-142 of year 2000 "Characterization Report") include: Textiles used as rags are assumed to enter the waste stream the same year the textiles are discarded. Some products (e.g., newspapers and packaging) normally have short lifetimes and products are assumed to be discarded in the year they are produced.

QA/QC Procedures: Quality assurance and quality control are provided by the Department of Commerce's internal procedures and systems. The report prepared by the Agency, "Characterization of Municipal Solid Waste in the United States," is reviewed by a number of experts for accuracy and soundness.

Data Quality Review: The report, including the baseline numbers and annual rates of recycling and per capita municipal solid waste generation, is widely accepted among experts.

Data Limitations: Data limitations stem from the fact that the baseline statistics and annual rates of recycling and per capita municipal solid waste generation are based on a series of models, assumptions, and extrapolations and, as such, are not an empirical accounting of municipal solid waste generated or recycled.

Error Estimate: N/A. Currently, the Office of Solid Waste (OSW) does not collect data on estimated error rates.

New/Improved Data or Systems: Because the statistics on MSW generation and recycling are widely reported and accepted by experts, no new efforts to improve the data or the methodology have been identified or are necessary.

References: U.S. EPA, Office of Solid Waste and Emergency Response, "*Municipal Solid Waste in the United States: 2003 Facts and Figures*" Washington, DC: EPA, Accessed January 10, 2006. Available only on the internet at: <http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm>

FY 2007 Performance Measure:

- **Annual increase in the percentage of facilities with permits or other approved controls**
- **Update controls for preventing releases at facilities that are due for permit renewals**
- **Percentage of MSW produced that is recycled**

Performance Database: The Resource Conservation Recovery Act Information System (RCRAInfo) is the national database which supports EPA's RCRA program.

Data Source: Data are entered by the states. Supporting documentation and reference materials are maintained in Regional and state files. EPA's Regional offices and authorized states enter data on a rolling basis**.**

Methods, Assumptions and Suitability: The Resource Conservation Recovery Act Information System (RCRAInfo) is the national database which supports EPA's RCRA program. RCRAInfo contains information on entities (generically referred to as "handlers") engaged in hazardous waste generation and management activities regulated under the portion of RCRA that provides for regulation of hazardous waste. RCRAInfo has several different modules, including status of RCRA facilities in the RCRA permitting universe.

QA/QC Procedures: States and EPA's Regional offices generate the data and manage data quality related to timeliness and accuracy. Within RCRAInfo, the application software contains structural controls that promote the correct entry of the high-priority national components (but does not prevent all user errors). RCRAInfo documentation, which is available to all users on-line at http://www.epa.gov/rcrainfo/, provides guidance to facilitate the generation and interpretation of data. Training on use of RCRAInfo is provided at national meetings, usually annually, depending on the nature of system changes and user needs. Even with the increasing

emphasis on data quality, with roughly 10,000 units in the baseline (e.g., a facility can have more than one unit), we hear of data problems with some facilities every year, particularly with the older inactive facilities. When we hear of these issues, we work with the EPA Regional offices to see that they get resolved. It may be necessary to make a few adjustments to the permitting baseline as data issues are identified. Determination of whether or not the GPRA annual goal #1 (listed above) is met is based on the legal and operating status codes for each unit. Each year since 1999, in discussions with Regional offices and states, EPA has highlighted the need to keep the data that support the GPRA permitting goal current. RCRAInfo is the sole repository for this information and is a focal point for planning from the local to national level. Accomplishments for goal # 2 (listed above) is based on the permit expiration date code. This is a new code for the new goal and we have made changes to the database to make this code a high priority code. We have discussed the need for correct entry with the Regions. Since tracking this information is new, we anticipate that we will have to work out some reporting bugs, review the accuracy of tracking when it begins in October 1, 2005, and make adjustments if necessary.

Note: Access to RCRAInfo is open only to EPA Headquarters, Regional, and authorized state personnel. It is not available to the general public because the system contains enforcement sensitive data. The general public is referred to EPA's Envirofacts Data Warehouse to obtain filtered information on RCRA-regulated hazardous waste sites.

Data Quality Review: The 1995 GAO report *Hazardous Waste: Benefits of EPA's Information System Are Limited* (AIMD-95-167, August 22, 1995, http://www.gao.gov/archive/1995/ai95167.pdf) on EPA's Hazardous Waste Information System reviewed whether national RCRA information systems support EPA and the states in managing their hazardous waste programs. Recommendations coincide with ongoing internal efforts to improve the definitions of data collected, ensure that data collected provide critical information and minimize the burden on states. RCRAInfo, the current national database has evolved in part as a response to this report.

Data Limitations: The authorized states have ownership of their data and EPA has to rely on them to make changes. The data that determine if a facility has met its permit requirements are prioritized in update efforts. Basic site identification data may become out-of-date because RCRA does not mandate annual or other periodic notification by the regulated entity when site name, ownership and contact information changes. Nevertheless, EPA tracks the facilities by their IDs and those should not change even during ownership changes. The baselines are composed of facilities that can have multiple units. These units may consolidate, split or undergo other activities that cause the number of units to change. We aim to have static baselines, but there may be occasions where we would need to make minor baseline modifications. The baseline of facilities that are currently tracked for goal #2 are "due for permit renewals," but we anticipate that there will be some facilities that cease to be "due for permit renewals" due to a change in facility status.

Error Estimate: N/A. Currently OSW does not collect data on estimated error rates.

New/Improved Data or Systems: EPA has successfully implemented new tools in RCRAInfo for managing environmental information to support Federal and state programs, particularly for

permit renewals. RCRAInfo allows for tracking of information on the regulated universe of RCRA hazardous waste handlers, such as facility status, regulated activities, and compliance history. The system also captures detailed data on the generation of hazardous waste by large quantity generators and on waste management practices from treatment, storage, and disposal facilities. RCRAInfo is web accessible, providing a convenient user interface for Federal, state and local managers, encouraging development of in-house expertise for controlled cost, and using commercial off-the-shelf software to develop reports from database tables.

References: RCRAInfo documentation and data (http://www.epa.gov/rcrainfo/). U.S. GAO, "Hazardous Waste: Benefits of EPA's Information System Are Limited" (AIMD-95-167), Washington, DC: GAO, August 22, 1995. Accessed January 18, 2006. Available on the Internet at <http://www.gao.gov/archive/1995/ai95167.pdf

FY 2007 Performance Measure:

- **Number of confirmed releases at UST facilities nationally**
- **Percent increase of UST facilities that are in significant operational compliance with both release detection and release prevention (Spill, overfill, and corrosion protection requirements)**

Performance Database: The Office of Underground Storage Tanks (OUST) does not maintain a national database. States individually maintain records for reporting state program accomplishments.

Data Source: Designated State agencies submit semi-annual progress reports to the EPA regional offices.

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: EPA's regional offices verify and then forward the data in a word processing table to OUST. OUST staff examine the data and resolve any discrepancies with the regional offices. The data are displayed in a word processing table on a region-by-region basis, which is a way regional staff can check their data.

Data Quality Review: None.

Data Limitations: Percentages reported are sometimes based on estimates and extrapolations from sample data. Data quality depends on the accuracy and completeness of state records.

Error Estimate: N/A

New/Improved Data or Systems: None.

References: U.S. EPA Memorandum, *FY 2005 End-of-Year Activity Report*, from Cliff Rothenstein, Director, Office of Underground Storage Tanks to UST/LUST Regional Division

Directors, Regions 1-10, dated December 15, 2005. Accessed January 18, 2006. <http://www.epa.gov/swerust1/cat/ca_05_34.pdf>

GOAL 3 OBJECTIVE 2

FY 2007 Performance Measures:

- **Number of inspections and exercises conducted at oil storage facilities required to have Facility Response Plans**
- **Oil spills responded to or monitored by EPA**
- **Gallons of oil spilled to navigable waters by facilities subject to the Facility Response Plan (FRP) regulations.**
- **Compliance rate of all facilities subject to Facility Response Plan (FRP) regulations.**
- **Compliance rate of inspected facilities subject to Facility Response Plan (FRP) regulations.**
- **Compliance rate of inspected facilities subject to SPCC regulations.**
- **Gallons of oil spilled to navigable waters per million program dollars spent annually on prevention and preparedness at Facility Response Plan (FRP) facilities.**

Performance Database: The Office of Emergency Management has recently gone through a reorganization bringing together the chemical and oil emergency prevention, preparedness, and response programs of the Agency. Additionally, the Oil Program has just undergone a PART review. Therefore, a new reporting system is under development to take into account the recent reorganization as well as the resulting annual and long-term measures developed through the PART review. This system will store oil spill prevention, emergency preparedness and response information (e.g., compliance and oil spill information).

Data Source: a new system pending. This new system will have several components. "Gallons of oil spilled" will be determined from the National Response Center database complemented by other sources of data on oil spills. OEM is completing a national database of FRP facilities that will serve as the basis for reporting on measures related to the FRP regulation. In addition, each Region will gather and submit data through a common reporting mechanism available to HQ and all Regions.

Methods, Assumptions and Suitability: Pending new database.

QA/QC Procedures: Pending new database.

Data Quality Reviews: Pending new database.

Data Limitations: Pending new database.

Error Estimate: Pending new database.

New/Improved Data or Systems: N/A

References: For additional information on the Oil program, see www.epa.gov/oilspill

FY 2007 Performance Measures:

- **Percentage of emergency response readiness improvement**

Performance Database: No specific database has been developed. Data from evaluations from each of the 10 Regions are tabulated and stored using standard software (WordPerfect, spreadsheets, etc.).

Data Source: Data are collected through detailed surveys of all Regional programs, and interviews with personnel and managers in each program office. The score represents a composite based upon data from each unique Regional and headquarters organization. Annual increments represent annual improvements. The survey instrument was developed based upon Core Emergency Response (ER) elements, and has been approved by EPA Headquarters and Regional managers. Core ER elements cover all aspects of the Core ER program, including Regional Response Centers, transportation, coordination with backup Regions, health and safety, delegation and warrant authorities, response readiness, response equipment, identification clothing, training and exercises, and outreach.

While EPA is currently prepared to respond to chemical, biological, and radiological incidents, improvement in the emergency response and homeland security readiness measure will demonstrate an increased ability to respond quickly and effectively to national-scale events. The FY 2007 Core ER target is to improve emergency response and homeland security readiness by 10% from the FY 2006 baseline performance.

Methods, Assumptions and Suitability: The Core ER elements were developed over the last several years by the EPA Removal Program to identify and clarify what is needed to ensure an excellent emergency response program. The elements, definitions, and rationales were developed by staff and managers and have been presented to the Administrator and other high level Agency managers. Based on the Core ER standards, evaluation forms and criteria were established for EPA's Regional programs, the Environmental Response Team (ERT), and Headquarters. These evaluation criteria identify what data need to be collected, and how that data translate into an appropriate score for each Core ER element. The elements and evaluation criteria will be reviewed each year for relevance to ensure that the programs have the highest standards of excellence and that the measurement clearly reflects the level of readiness. The data are collected from each Regional office, ERT, and Headquarters using a systematic, objective process. Each evaluation team consists of managers and staff, from Headquarters and from another EPA Regional office, with some portion of the team involved in all reviews for consistency and some portion varying to ensure independence and objectivity. For instance, a team evaluating Region A might include some or all of the following: a staff person from Headquarters who is participating in all reviews, a staff person from Headquarters who is very familiar with Region A activities, a manager from Headquarters, and a staff person and/or manager from Region B. One staff or group will be responsible for gathering and analyzing all

the data to determine the overall score for each Regional office, ERT, and Headquarters, and for determining an overall National score.

QA/QC Procedures: See "Methods, Assumptions and Suitability"

Data Quality Review: The evaluation team will review the data (see Methods, Assumptions and Suitability) during the data collection and analysis process. Additional data review will be conducted after the data has been analyzed to ensure that the scores are consistent with the data and program information. There currently is no specific database that has been developed to collect, store, and manage the data.

Data Limitations: One key limitation of the data is the lack of a dedicated database system to collect and manage the data. Standard software packages (word processing, spreadsheets) are used to develop the evaluation criteria, collect the data, and develop the accompanying readiness scores. There is also the possibility of subjective interpretation of data.

Error Estimate: It is likely that the error estimate for this measure will be small for the following reasons: the standards and evaluation criteria have been developed and reviewed extensively by Headquarters and EPA's Regional managers and staff; the data will be collected by a combination of managers and staff to provide consistency across all reviews plus an important element of objectivity in each review; the scores will be developed by a team looking across all ten Regions, ERT, and Headquarters; and only twelve sets of data will be collected, allowing for easier cross-checking and ensuring better consistency of data analysis and identification of data quality gaps.

New/Improved Data or Systems: There are no current plans to develop a dedicated system to manage the data.

References: FY 2004/2005 Superfund Program Implementation Manual (SPIM), http://www.epa.gov/superfund/action/process/pdfs/appdxb3p1.pdf.

FY 2007 Performance Measures:

- **Number of Superfund hazardous waste sites with human exposures controlled**
- **Number of Superfund hazardous waste sites with groundwater migration controlled**
- **Federal Facility Superfund sites with human exposures controlled (PART measure)**
- **Federal Facility Superfund sites with contaminated groundwater controlled (PART measure)**
- **Number of final remedies (cleanup targets) selected at Superfund sites (PART measure)**
- **Number of Superfund final assessment decisions (PART measure)**
- **Number of Superfund construction completions (PART measure)**
- **Number of Federal Facility Superfund sites where all remedies have completed construction (PART measure)**
- **Number of Federal Facility Superfund sites where the final remedial decision for contaminants at the site has been determined (PART measure)**

- **Voluntary removal actions overseen by EPA and completed annually (PART measure)**
- **Superfund-lead removal actions completed annually (PART measure)**

Performance Database: The Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS) is the database used by the Agency to track, store, and report Superfund site information.

Data Source: CERCLIS is an automated EPA system; headquarters and EPA's Regional offices enter data into CERCLIS on a rolling basis.

Methods, Assumptions and Suitability: Each performance measure is a specific variable within CERCLIS.

QA/QC Procedures: To ensure data accuracy and control, the following administrative controls are in place: 1) Superfund Implementation Manual (SPIM), the program management manual that details what data must be reported; 2) Report Specifications, which are published for each report detailing how reported data are calculated; 3) Coding Guide, which contains technical instructions to such data users as Regional Information Management Coordinators (IMCs), program personnel, report owners, and data input personnel; 4) Quality Assurance (QA) Unit Testing, an extensive QA check against report specifications; 5) Regional CERCLIS Data Entry Internal Control Plan, which includes: (a) regional policies and procedures for entering data into CERCLIS; (b) a review process to ensure that all Superfund accomplishments are supported by source documentation; (c) delegation of authorities for approval of data input into CERCLIS; and (d) procedures to ensure that reported accomplishments meet accomplishment definitions; and (6) a historical lockout feature has been added to CERCLIS so that changes in past fiscal year data can be changed only by approved and designated personnel and are logged to a change-log report. Specific direction for these controls are contained in the Superfund Program Implementation Manual (SPIM) Fiscal Year 2006/2007 (SPIM. U.S. EPA, Superfund. "Superfund Program Implementation Manual (SPIM Fiscal Year 2006/2007." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: <http://www.epa.gov/superfund/action/process/spim06.htm>)

CERCLIS operation and further development is taking place under the following administrative control quality assurance procedures: 1) Office of Environmental Information Interim Agency Life Cycle Management Policy Agency Directive 2100.4. U.S. EPA, Office of Technology Operations and Planning. "OEI Information Management and Information Technology Policies." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: <http://cfint.rtpnc.epa.gov/otop/policies/infoman.cfm>; U.S. EPA, Office of Technology Operations and Planning. "OEI Information Management and Information Technology Policies, Interim Agency Systems Life Cycle Management Policy, Agency Directive 2100.4." Washington, DC: EPA. Accessed January 10, 2006. Available on the Intranet at: <http://intranet.epa.gov/repolicy/ads/orders/2100_4.pdf>; 2) the Office of Solid Waste and Emergency Response (OSWER) Quality Management Plan. U.S. EPA, Office of Solid Waste and Emergency Response. "OSWER Quality Management Plan." Washington, DC: EPA. August 2003. Accessed January 10, 2006. Available on the Internet at: <http://www.epa.gov/swerffrr/pdf/oswer_qmp.pdf>; 3) Agency platform, software and hardware

standards. U.S. EPA, Office of Technology Operations and Planning. "Information Technology Roadmap." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: <http://basin.rtpnc.epa.gov/ntsd/itroadmap.nsf>; 4) Quality Assurance Requirements in all contract vehicles under which CERCLIS is being developed and maintained. U.S. EPA, Environmental Protection Agency. "EPA's Information Quality Guidelines (IQG)." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: <http://www.epa.gov/quality/informationguidelines>; and 5) Agency security procedures. U.S. EPA, Office of Technology Operations and Planning. "IT Security IT Roadmap." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: <http://basin.rtpnc.epa.gov/ntsd/ITRoadMap.nsf/Security?OpenView> In addition, specific controls are in place for system design, data conversion and data capture, and CERCLIS outputs.

Data Quality Reviews: Two audits, one by the Office Inspector General (OIG) and the other by Government Accountability Office (GAO), were conducted to assess the validity of the data in CERCLIS. The OIG audit report, *Superfund Construction Completion Reporting* (No. E1SGF7_05_0102_ 8100030), dated December 30, 1997, was prepared to verify the accuracy of the information that the Agency was providing to Congress and the public. The OIG report concluded that the Agency "has good management controls to ensure accuracy of the information that is reported," and "Congress and the public can rely upon the information EPA provides regarding construction completions." The GAO's report, *Superfund: Information on the Status of Sites* (GAO/RCED-98-241), dated August 28, 1998, was prepared to verify the accuracy of the information in CERCLIS on sites' cleanup progress. The report estimates that the cleanup status of National Priority List (NPL) sites reported by CERCLIS as of September 30, 1997, is accurate for 95 percent of the sites. U.S. General Accounting Office. "Superfund Information on the Status of Sites." Washington, DC: GAO. August 1998. Accessed January 10, 2006. Available on the Internet at: <http://www.gao.gov/archive/1998/rc98241.pdf>. Another OIG audit, *Information Technology - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality* (Report No. 2002-P-00016), dated September 30, 2002, evaluated the accuracy, completeness, timeliness, and consistency of the data entered into CERCLIS. The report provided 11 recommendations to improve controls for CERCLIS data quality. EPA concurs with the recommendations contained in the audit, and many of the identified problems have been corrected or long-term actions that would address these recommendations continue to be underway. U.S. Office of Inspector General. "Information Technology - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality." Washington, DC: OIG. September 2002. Accessed January 10, 2006. Available on the Internet at: . <http://www.epa.gov/oig/reports/2002/cerlcis.pdf>

The IG reviews annually the end-of-year Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) data, in an informal process, to verify the data supporting the performance measures. Typically, there are no published results.

The Quality Management Plan (QMP) for the Office of Solid Waste and Emergency Response (OSWER) was signed in August 2003. U.S. EPA, Office of Solid Waste and Emergency Response. "OSWER Quality Management Plan." Washington, DC: EPA. August 2003.

Accessed January 10, 2006. Available on the Internet at: <http://www.epa.gov/swerffrr/pdf/oswer_qmp.pdf>

Data Limitations: Weaknesses were identified in the OIG audit, *Information Technology - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality* (Report No. 2002-P-00016), dated September 30, 2002. The Agency disagrees with the study design and report conclusions; however, the report provided 11 recommendations with which EPA concurs. Many of the identified problems have been corrected or long-term actions that would address these recommendations continue to be underway, e.g., 1) FY 02/03 SPIM Chapter 2 update was made to better define the Headquarters' and Regional roles and responsibilities for maintaining planning and accomplishment data in CERCLIS; 2) FY 04/05 SPIM Appendix A, Section A.A.5 'Site Status Indicators' added language to clarify the use of the non-NPL status code of "SX"; 3) FY 04/05 SPIM Appendix A, Section A.A.6 'Data Quality' added a section on data quality which includes a list of relevant reports; 4) FY 04/05 SPIM Appendix E, Section E.A.5 "Data Owners/Sponsorship' was revised to reflect what data quality checks (focus data studies) will be done by designated Regional and headquarters staff; 5) A data quality objectives supplement for GPRA measures was added in Change 6 to this SPIM. For changes regarding this OIG audit, see the Change Log for this SPIM. U.S. EPA. Superfund. "Change Log 7." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: <http://www.epa.gov/superfund/action/process/pdfs/changelog7.pdf>; 6) Draft guidance from OCA (Other Cleanup Activity) subgroup, which outlines the conditions under which sites are taken back from states when states have the lead but are not performing; and 7) Pre-CERCLIS Screening: A Data Entry Guide, which provides guidance to the regions for preventing entry of duplicate sites in CERCLIS. The development and implementation of a quality assurance process for CERCLIS data has begun. This process includes delineating quality assurance responsibilities in the program office and periodically selecting random samples of CERCLIS data points to check against source documents in site files.

Error Estimate: The GAO's report, *Superfund: Information on the Status of Sites* (GAO/RECD-98-241), dated August 28, 1998, estimates that the cleanup status of National Priority List sites reported by CERCLIS is accurate for 95 percent of the sites. The OIG report, *Information Technology - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality* (Report No. 2002-P-00016), dated September 30, 2002, states that over 40 percent of CERCLIS data on site actions reviewed was inaccurate or not adequately supported. Although the 11 recommendations were helpful and will improve controls over CERCLIS data, the Agency disagrees and strongly objects to the study design and report conclusions, stating they do not focus on the program's data quality hierarchy and the importance it places on NPL sites.

New/Improved Data or Systems: A CERCLIS modernization effort, initiated in 2002, has been completed. As a result of the modernization effort, CERCLIS now has standards for data quality. Each EPA Region's CERCLIS Data Entry Control Plan, which identifies policies and procedures for data entry, is reviewed annually. Data quality audit fields have been added to CERCLIS. EPA Headquarters has begun to create and share with the Regions data quality audit reports. These reports document data quality for timeliness, completeness, and accuracy as

determined by the Superfund data sponsors to encourage and ensure high data quality. The modernization effort has increased the availability of CERCLIS data via Superfund eFacts, a Superfund data mart which serves program managers in Headquarters and the Regions. In FY 2007, the program will continue its effort to improve its management of the program through the increased availability of timely and accurate technical information to Superfund's managers. In 2007, the Agency will work to increase utilization of CERCLIS data by incorporating additional remedy selection, risk, removal response, and community involvement data into CERCLIS.

The Business Process Reevaluation task in the modernization project has provided CERCLIS managers with a first step in an implementation evaluation. The document, which resulted from the evaluation, is being used as a valuable resource for scoping the future redesign of CERCLIS as well as the realignment of the database that will remove unnecessary data and add the new data fields that are necessary to manage the Superfund program today. The redesign is mandated to bring CERCLIS into the Agency's Enterprise Architecture. As part of OSRTI's effort to bring CERCLIS into the Agency's Enterprise Architecture all Regional databases have been moved to the National Computing Center in RTP. This is the first step in folding the Headquarters and Regional databases into one database. This move of the databases to RTP is being done without changing the application, by using a commercial off the shelf (COTS) software program to enable the Regional data entry staff to input data over the Agency's Wide Area Network. The initial step of moving the databases to RTP and moving all users to the COTS software has been completed. The move to a single database will be completed during FY 2006 and implemented in FY 2007. The Superfund Document Management System (SDMS) will be linked to CERCLIS. This linkage will enable users to easily transition between the programmatic accomplishments reporting to the actual document that defines and describes the accomplishment reported in CERCLIS. The effort to link SDMS and CERCLIS and to consolidate the systems will lead to common reporting (same events and data) in CERCLIS and SDMS. This will be done by electronically extracting data from the documents in SDMS to fill the data fields in CERCLIS - eliminating the manual data entry/human error impacts.

References: OIG audit *Superfund Construction Completion Reporting*, (No. E1SGF7_05_0102_ 8100030) and *Information Technology - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality*, (No. 2002-P-00016). U.S. Office of Inspector General. "Information Technology: Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality." Washington, DC: OIG. September 2002. Accessed January 10, 2006. Available on the Internet at: http://www.epa.gov/oig/reports/2002/cerlcis.pdf); and the GAO report, *Superfund Information on the Status of Sites* (GAO/RCED-98-241). U.S. General Accounting Office. "Superfund Information on the Status of Sites." Washington, DC: GAO. August 1998. Accessed January 10, 2006. Available on the Internet at: http://www.gao.gov/archive/1998/rc98241.pdf). The Superfund Program Implementation Manuals for the fiscal years 1987 to the current manual. U.S. EPA, Superfund. "Policies and Guidances." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: http://www.epa.gov/superfund/action/guidance/index.htm. The Quality Management Plan (QMP) for the Office of Solid Waste and Emergency Response (August 2003). U.S. EPA, Office of Solid Waste and Emergency Response. "OSWER Quality Management Plan." Washington, DC: EPA. August 2003. Accessed January 10, 2006. Available on the Internet at:

http://www.epa.gov/swerffrr/pdf/oswer_qmp.pdf). Office of Environmental Information Interim Agency Life Cycle Management Policy Agency Directive 2100.4. U.S. EPA, Office of Technology Operations and Planning. "OEI Information Management and Information Technology Policies." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: http://cfint.rtpnc.epa.gov/otop/policies/infoman.cfm and U.S. EPA, Office of Technology Operations and Planning. "OEI Information Management and Information Technology Policies, Interim Agency Systems Life Cycle Management Policy, Agency Directive 2100.4." Washington, DC: EPA. Accessed January 10, 2006. Available on the Intranet at: http://intranet.epa.gov/repolicy/ads/orders/2100_4.pdf. EPA platform, software and hardware standards. U.S. EPA, Office of Technology Operations and Planning. "Information Technology Roadmap." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: http://basin.rtpnc.epa.gov/ntsd/itroadmap.nsf. Quality Assurance Requirements in all contract vehicles under which CERCLIS are being developed and maintained (http://www.epa.gov/quality/informationguidelines). EPA security procedures. U.S. EPA, Office of Technology Operations and Planning. "IT Security IT Roadmap." Washington, DC: EPA. Accessed January 10, 2006. Available on the Internet at: http://basin.rtpnc.epa.gov/ntsd/ITRoadMap.nsf/Security?OpenView

FY 2007 Performance Measure:

- **Percentage of Superfund spending that is obligated to individual sites each year (PART measure)**

- **Annual Program dollars obligated per operable unit completing cleanup activities (PART measure)**

- **Superfund-lead removal actions completed annually per million dollars (PART measure)**

Performance Database: Integrated Financial Management System (IFMS) is EPA's financial management system and the official system of record for budget and financial data.

Data Source: IFMS contains records of all financial transactions (e.g., personnel, contracts, grants, other) of Superfund appropriation resources, as distinguished by U.S. Treasury schedule codes. Procurement data are entered manually into IFMS by Funds Control Officers throughout the Agency. Site-specific obligations are distinguished through the Site/Project field of the IFMS account number that is assigned to every financial transaction.

Methods, Assumptions and Suitability: Total annual obligations include current and prior year appropriated resources, excluding Office of Inspector General (OIG) and Science and Technology transfers. Obligation data are generated using the OCFO Reporting and Business Intelligence Tool (ORBIT), the Agency's system for evaluating IFMS data. Site-specific obligation data are derived using query logic that evaluates the Site/Project field of the IFMS account number. For a given fiscal year, the percentage of appropriated resources that is obligated site-specifically is the result of dividing site-specific annual obligations by total annual obligations.

QA/QC Procedures: The data are compliant with the Federal Managers Financial Integrity Act (FMFIA) of 1982 and received FY 2005 FMFIA certification

Data Quality Reviews: EPA received an unqualified audit opinion by the OIG for the annual financial statements, and the auditor recommended several corrective actions. All recommendations have been implemented by Office of the Chief Financial Officer in IFMS.

Data Limitations: Accuracy of EPA personnel in recording their time.

Error Estimate: None.

New/Improved Data or Systems: EPA plans to replace IFMS with a new system in FY 2008.

References:

FY 2005 FMFIA Certification
2004 Audited Financial Statements, see http://www.epa.gov/oig/reports/financial.htm
OIG Audit "EPA Needs to Improve Change Controls for Integrated Financial Management System" dated August 24, 2004 (2004-P-00026)

FY 2007 Performance Measures:

- **Current human exposures under control (RCRA high priority facilities) (PART measure)**
- **Migration of contaminated groundwater under control (RCRA high priority facilities) (PART measure)**

Performance Database: The Resource Conservation Recovery Act Information System (RCRAInfo) is the national database that supports EPA's RCRA program.

Data Source: The states and Regions enter data. A "High", "Medium", or "Low" entry is made in the database with respect to final-assessment decision. A "yes" or "no" or "insufficient information" entry is made in the database with respect to meeting the human exposures to toxins controlled and releases to groundwater controlled indicators. An entry will be made in the database to indicate the date when a remedy is selected and the complete construction of a remedy is made. Supporting documentation and reference materials are maintained in the Regional and/or state files. EPA's Regional offices and authorized states enter data on a continual basis.

Methods, Assumptions and Suitability: RCRAInfo has several different modules, including a Corrective Action Module that tracks the status of facilities that require, or may require, corrective actions. RCRAInfo contains information on entities (generically referred to as "handlers") engaged in hazardous waste (HW) generation and management activities regulated under the portion of RCRA that provides for regulation of hazardous waste. All five measures are used to summarize and report on the facility-wide environmental conditions at the RCRA Corrective Action Program's highest priority facilities. The environmental indicators are used to

track the RCRA program's progress in getting highest priority contaminated facilities under control. Known and suspected facility-wide conditions are evaluated using a series of simple questions and flow-chart logic to arrive at a reasonable, defensible determination. These questions were issued as a memorandum titled: *Interim Final Guidance for RCRA Corrective Action Environmental Indicators, Office of Solid Waste, February 5, 1999).* Lead regulators for the facility (authorized state or EPA) make the environmental indicator determination; however, facilities or their consultants may assist EPA in the evaluation by providing information on the current environmental conditions. Remedies selected and complete constructions of remedies are used to track the RCRA program's progress in getting highest priority contaminated facilities moving towards final cleanup. The lead regulators for the facility make the remedies selection and construction completion of remedies determinations.

QA/QC Procedures: States and Regions generate the data and manage data quality related to timeliness and accuracy (i.e., the environmental conditions and determinations are correctly reflected by the data). Within RCRAInfo, the application software enforces structural controls that ensure that high-priority national components of the data are properly entered. RCRAInfo documentation, which is available to all users on-line, provides guidance to facilitate the generation and interpretation of data. Training on use of RCRAInfo is provided on a regular basis, usually annually, depending on the nature of systems changes and user needs.

Note: Access to RCRAInfo is open only to EPA Headquarters, Regional, and authorized state personnel. It is not available to the general public because the system contains enforcement sensitive data**.** The general public is referred to EPA's Envirofacts Data Warehouse to obtain filtered information on RCRA-regulated hazardous waste facilities.

Data Quality Review: GAO's 1995 Report on EPAs Hazardous Waste Information System (http://www.access.gpo.gov/su_docs/fdlp/pubs/study/studyhtm.html) reviewed whether national RCRA information systems support EPA and the states in managing their hazardous waste programs. Recommendations coincide with ongoing internal efforts (WIN/Informed) to improve the definitions of data collected, ensure that data collected provide critical information and minimize the burden on states. EPA's Quality Staff of Office of Environmental Information conducted a quality systems audit in December 2003. The audit found the corrective action program satisfactory.

Data Limitations: No data limitations have been identified. As discussed above, the performance measure determinations are made by the authorized states and EPA Regions based on a series of standard questions and entered directly into RCRAInfo. EPA has provided guidance and training to states and Regions to help ensure consistency in those determinations. High priority facilities are monitored on a facility-by-facility basis and the QA/QC procedures identified above are in place to help ensure data validity.

Error Estimate: N/A. Currently, the Office of Solid Waste does not collect data on estimated error rates.

New/Improved Data or Systems: EPA has successfully implemented new tools for managing environmental information to support federal and state programs, replacing the old data systems

(the Resource Conservation and Recovery Information System and the Biennial Reporting System) with RCRAInfo. RCRAInfo allows for tracking of information on the regulated universe of RCRA hazardous waste handlers, such as facility status, regulated activities, and compliance history. The system also captures detailed data on the generation of hazardous waste from large quantity generators and on waste management practices by treatment, storage, and disposal facilities. RCRAInfo is web-accessible, providing a convenient user interface for federal, state and local managers, encouraging development of in-house expertise for controlled cost, and using commercial off-the-shelf software to develop reports from database tables.

References: U.S. GAO, "Hazardous Waste: Benefits of EPA's Information System Are Limited" (AIMD-95-167), Washington, DC: GAO, August 22, 1995. Accessed January 18, 2006. Available on the Internet at <http://www.gao.gov/archive/1995/ai95167.pdf>

FY 2007 Performance Measures:

- **Number of cleanups that meet state risk-based standards for human exposure and groundwater contamination (LUST)**

- **Number of cleanups that meet state risk-based standards for human exposure and groundwater contamination on Indian country (LUST)**

Performance Database: The Office of Underground Storage Tanks (OUST) does not maintain a national database. States individually maintain records for reporting state program accomplishments.

Data Source: Designated State agencies submit semi-annual progress reports to the EPA regional offices. The data for the comparison of leaking underground storage tank cleanups will be developed in FY 2005 for a planned reporting date of FY 2006.

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: EPA's regional offices verify and then forward the data in a word processing table to OUST. OUST staff examine the data and resolve any discrepancies with the regional offices. The data are displayed in a word processing table on a region-by-region basis, which is a way regional staff can check their data.

Data Quality Review: None.

Data Limitations: Percentages reported are sometimes based on estimates and extrapolations from sample data. Data quality depends on the accuracy and completeness of state records.

Error Estimate: N/A

New/Improved Data or Systems: None.

References: U.S. EPA Memorandum, *FY 2005 End-of-Year Activity Report*, from Cliff Rothenstein, Director, Office of Underground Storage Tanks to UST/LUST Regional Division Directors, Regions 1-10, dated December 15, 2005. Accessed January 18, 2006. <http://www.epa.gov/swerust1/cat/ca_05_34.pdf>

GOAL 3 OBJECTIVE 3

FY 2007 Performance Measure:

- **Refer to DOJ, settle, or writeoff 100% of Statute of Limitations (SOLs) cases for Superfund sites with total unaddressed past costs equal to or greater than $200,000 and report value of costs recovered**

- **Reach a settlement or take an enforcement action before the start of a remedial action at 90 percent of Superfund sites having viable, liable responsible parties other than the Federal government**

Performance Database: The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database contains information on hazardous waste sites, potentially hazardous waste sites and remedial activities across the nation. The database includes sites that are on the National Priorities List (NPL) or being considered for the NPL.

Data Source: Automated EPA system; Headquarters and EPA's Regional Offices enter data into CERCLIS

Methods, Assumptions and Suitability: There are no analytical or statistical methods used to collect the information. The performance data collected on a fiscal year basis only. Enforcement reports are run at the end of the fiscal year, and the data that support this measure are extracted from the report.

QA/QC Procedures: To ensure data accuracy and control, the following administrative controls are in place: 1) Superfund Implementation Manual (SPIM), the program management manual that details what data must be reported; 2) Report Specifications, which are published for each report detailing how reported data are calculated; 3) Coding Guide, which contains technical instructions to such data users as Regional Information Management Coordinators (IMCs), program personnel, report owners, and data input personnel; 4) Quality Assurance (QA) Unit Testing, an extensive QA check against report specifications; 5) Regional CERCLIS Data Entry Internal Control Plan, which includes: (a) regional policies and procedures for entering data into CERCLIS; (b) a review process to ensure that all Superfund accomplishments are supported by source documentation; (c) delegation of authorities for approval of data input into CERCLIS; and (d) procedures to ensure that reported accomplishments meet accomplishment definitions; and (6) a historical lockout feature has been added to CERCLIS so that changes in past fiscal year data can be changed only by approved and designated personnel and are logged to a change-log report. Specific direction for these controls are contained in the Superfund Program Implementation Manual (SPIM) Fiscal Year 2004/2005

(http://www.epa.gov/superfund/action/process/spim04.htm) and the Fiscal Year 2006/2007 SPIM (http://www.epa.gov/superfund/action/process/spim06.htm).

Data Quality Review: The IG annually reviews the end-of-year CERCLIS data, in an informal process, to verify the data supporting the performance measure. Typically, there are no published results.

Data Limitations: None

Error Estimate: NA

New/Improved Data or Systems: None

References: Office of Site Remediation Enforcement (OSRE) Quality Management Plan, approved April 11, 2001

FY 2007 Performance Measure:

- **By FY 2007, complete evaluation of monitored natural attenuation at a site with inorganic ground water contamination using the first version of the evaluation framework developed in FY 2005**

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

GOAL 4 OBJECTIVE 1

FY 2007 Performance Measures:

•Detailed Review Papers Completed (PART measure)
•Prevalidation Studies Completed (PART measure)
•Validation by Multiple Labs Completed (PART measure)

•Peer Reviews (PART measure)
•Assays Ready for Use (PART measure)

Performance Database: Performance is measured by the cumulative number of actions (usually studies) to be undertaken by the projected completion date of FY 2009. The measures appear as fractions where the numerator represents the total number of cumulative actions for the current year and the denominator represents the actions projected to be completed by the end of FY 2009.

Data Source: Data are generated to support all stages of validation of endocrine test methods through contracts, grants and interagency agreements, and the cooperative support of the Organization of Economic Cooperation and Development (OECD), and EPA's Office of Research and Development (ORD). The scope of the effort includes the conduct of laboratory studies and associated analyses to validate the assays proposed for the Endocrine Disruptor Screening Program (EDSP).

Methods, Assumptions, and Suitability: The measures are program outputs that represent the program's progress toward completing the validation of endocrine test methods. The measures track progress through each stage of the process rather than reporting only the end product. These measures are being adopted because they best show the complexity of the validation process. For example, EPA may plan on four studies to address prevalidation issues for a given assay, and at the completion of the four studies, the annual performance measure (APM) would be 4/4. Upon review of the last study, EPA may conclude that an ambiguity exists, or another question has arisen that requires an additional study. The APM would then be revised to 4/5, showing that four studies were completed, but another study must now be completed to address all issues that allow EPA to move to the next phase of validation. The denominator also could move downward if, for instance, EPA concludes that a planned study is not needed or if an assay performs so poorly during prevalidation that it is dropped from the Endocrine Disruptor Screening Program.

Although 21 assays are being developed and validated (denoted by the denominator for the measure "Assays Ready for Use"), the denominators for the other measures differ from this number for several reasons: more than one assay may be covered in a Detailed Review Paper, more than one prevalidation study is required to optimize an assay and address prevalidation questions, etc.

How various studies are counted also requires some explanation as there are several options. EPA has taken the view that a study is laboratory work performed to address a specific question whether performed in one laboratory or many labs. Thus, a single chemical study will be counted as one study, a multichemical study involving 10 chemicals in one laboratory will be counted as one study, and a study of interlaboratory variability will be counted as one study for each lab in which testing is conducted. From these examples, it is apparent that laboratory studies differ considerably in scope and complexity.

QA/QC Procedures: Required by the EPA's Good Laboratory Practices (GLPs) (40 CFR Part 792 and 40 CFR 160 Part 1), EDSP's contractor operates an independent quality assurance unit

(QAU) to ensure that all studies are conducted under an appropriate QA/QC program. For this procurement, two levels of QA/QC are employed. All prevalidation and interlaboratory studies are conducted under a project specific Quality Assurance Program (QAP) developed by the contractor and approved by EPA. All validation studies are conducted according to GLPs. In addition, EPA or its agent conducts an independent lab/QA audit of facilities participating in the validation program.

Data Quality Review: All of the documentation and data generated by the contractor, OECD and ORD, as it pertains to the EDSP, are reviewed for quality and scientific applicability. The contractor maintains a Data Coordination Center which manages information/data generated under EDSP. The contractor also conducts statistical analyses relating to lab studies, chemical repository, and quality control studies.

Data Limitations: There is a data lag of approximately 9-24 months due to the variation in length and complexity of the lab studies, and for time required for review, analysis and reporting of data.

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: EPA Website; EPA Annual Report; Endocrine Disruptor Screening Program Proposed Statement of Policy, Dec. 28, 1998; Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC) Final Report (EPA/743/R-98/003); EPA Contract # 68-W-01-023.

FY 2007 Performance Measures:

- **Number of registrations of reduced risk pesticides registered (Register safer chemicals and biopesticides) (cumulative)**
- **Number of new (active ingredients) conventional pesticides registered (New Chemicals)(Cumulative)**
- **Number of conventional new uses registered (New Uses)(Cumulative)**
- **Maintain timeliness of Section 18 Emergency Exemption Decisions**
- **Reduce registration decision times for new conventional chemicals (PART measure)**
- **Reduce registration decision times for reduced risk chemicals**

Performance Database: The OPPIN (Office of Pesticide Programs Information Network) consolidates various pesticides program databases. It is maintained by the EPA and tracks regulatory data submissions and studies, organized by scientific discipline, which are submitted by the registrant in support of a pesticide's registration. In addition to tracking decisions in OPPIN, manual counts are also maintained by the office on the registrations of reduced risk pesticides. Results for reduced risk pesticides, new active conventional ingredients, and new uses have been reported since 1996. The results are calculated on a fiscal year (FY) basis. For antimicrobial new uses, results have been reported since FY 2004 on a FY basis. Both S18

timeliness and reduced risk decision times are being reported on a FY basis for the first time in FY 2005.

Data Source: Pesticide program reviewers update the status of the submissions and studies as they are received and as work is completed by the reviewers. The status indicates whether the application is ready for review, the application is in the process of review, or the review has been completed.

Methods, Assumptions and Suitability: The measures are program outputs which when finalized, represent the program's statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment, and when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, registration outputs do provide a means for reducing risk by ensuring that pesticides entering the marketplace meet the latest health standards, thus when used according to the label are safe.

QA/QC Procedures: A reduced risk pesticide must meet the criteria set forth in Pesticide Registration Notice 97-3, September 4, 1997. Reduced risk pesticides include those which reduce the risks to human health; reduce the risks to non-target organisms; reduce the potential for contamination of groundwater, surface water or other valued environmental resources; and/or broaden the adoption of integrated pest management strategies, or make such strategies more available or more effective. In addition, biopesticides are generally considered safer (and thus reduced risk). All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. The office adheres to its Quality Management Plan (May 2000) in ensuring data quality and that procedures are properly applied.

Data Quality Review: These are program outputs. EPA staff and management review the program outputs in accordance with established policy for the registration of reduced-risk pesticides as set forth in Pesticide Regulation Notice 97-3, September 4, 1997.

Data Limitations: None. All required data must be submitted for the risk assessments before the pesticide is registered. If data are not submitted, the pesticide is not registered. As stated above, a reduced risk pesticide must meet the criteria set forth in PRN 97-3 and all registrations must meet FQPA safety requirements. If a pesticide does not meet these criteria, it is not registered. If an application for a reduced risk pesticide does not meet the reduced risk criteria, it is reviewed as a conventional active ingredient.

Error Estimate: N/A

New/Improved Data or Systems: The OPPIN (Office of Pesticide Programs Information Network), which consolidates various pesticides program databases, will reduce the processing time for registration actions.

References: FIFRA Sec 3(c)(5); FFDCA Sec 408(a)(2); EPA Pesticide Registration Notice 97-3, September 4, 1997; Food Quality Protection Act (FQPA) 1996; OPP Quality Management Plan, May 2000); Endangered Species Act.

FY 2007 Performance Measures:

- **Number of Tolerance Reassessments issued (PART measure)**
- **Number of Reregistration Eligibility Decisions (REDs) issued (PART measure)**
- **Number of Product Reregistration decisions issued**
- **Tolerance Reassessments for top 20 foods eaten by children (PART measure)**
- **Number of inert ingredients tolerance/tolerance exemptions reassessed**
- **Reduce decision times for REDs (PART measure)**

Performance Database: The OPPIN (Office of Pesticide Programs Information Network) consolidates various EPA program databases. It is maintained by the EPA and tracks regulatory data submissions and studies, organized by scientific discipline, which are submitted by the registrant in support of a pesticide's reregistration. In addition to tracking decisions in OPPIN, manual counts are also maintained by the office on the reregistrations decisions. Decisions are logged in as the action is completed, both for final decisions and interim decisions. REDs and product reregistration decisions have been reported on a FY basis since FY 1996. Reduction in decision times for REDs will be reported on an FY basis in FY 2005.

Data Source: EPA's Pesticides Program staff and managers.

Methods, Assumptions and Suitability: The measures are program outputs which represent the program's statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment and when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, they do provide a means for reducing risk in that the program's safety review prevents dangerous pesticides from entering the marketplace.

QA/QC Procedures: All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. The office adheres to the procedures for quality management of data as outlined in its QMP approved May 2000.

Data Quality Review: Management reviews the program counts and signs off on the decision document.

Data Limitations: None known.

Error Estimate: N/A. There are no errors associated with count data.

New/Improved Data or Systems: The OPPIN, which consolidates various pesticides program databases, will contribute to reducing the processing time for reregistration actions.

References: EPA Website http://www.epa.gov/pesticides EPA Annual Report 2002 EPA Number 735-R-03-001; 2003 Annual Performance Plan OPP Quality Management Plan, May 2000; Endangered Species Act.

FY 2007 Performance Measure:

- **Percentage of Acre Treatments with Reduced Risk Pesticides (PART measure)**

Performance Database: EPA uses an external database, Doane Marketing Research data, for this measure. The data have been reported for trend data since FY 2001 on an FY basis.

Data Source: Primary source is Doane Marketing Research, Inc. (a private sector research database). The database contains pesticide usage information by pesticide, year, crop use, acreage and sector.

Methods, Assumptions and Suitability: A reduced-risk pesticide must meet the criteria set forth in Pesticide Registration Notice 97-3, September 4, 1997. Reduced-risk pesticides include those which reduce the risks to human health; reduce the risks to non-target organisms; reduce the potential for contamination of groundwater, surface water, or other valued environmental resources; and/or broaden the adoption of integrated pest management strategies or make such strategies more available or more effective. In addition, biopesticides are generally considered safer (and thus reduced-risk). EPA's statistical and economics staff review data from Doane. Information is also compared to prior years for variations and trends as well as to determine the reasons for the variability.

Doane sampling plans and QA/QC procedures are available to the public at their website. More specific information about the data is proprietary and a subscription fee is required. Data are weighted and a multiple regression procedure is used to adjust for known disproportionalities (known disproportionality refers to a non proportional sample, which means individual respondents have different weights) and ensure consistency with USDA and state acreage estimates.

QA/QC Procedures: All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. Doane data are subject to extensive QA/QC procedures, documented at their websites. In ensuring the quality of the data, EPA's pesticide program adheres to its Quality Management Plan (QMP), approved May 2000.

The main customers for Doan pesticide usage data are the pesticide registrants. Since those registrants know about sales of their own products, they have an easy way to judge the quality of Doane provided data. If they considered the quality of the data to be poor, they would not continue to purchase the data.

Data Quality Review: Doane data are subject to extensive internal quality review, documented at the website. EPA's statistical and economics staff review data from Doane. Information is also

compared to prior years for variations and trends as well as to determine the reasons for the variability. For some crops and states, comparisons are also made with a more limited pesticide usage database from the National Agricultural Statistics of USDA.

Data Limitations: Doane data are proprietary; thus in order to release any detailed information, the Agency must obtain approval. There is a data lag of approximately 12-18 months, due to the collection of data on a calendar year (CY) basis, time required for Doane to process data, lead time for EPA to purchase and obtain data, plus the time it takes to review and analyze the data within the office's workload.

Error Estimate: Error estimates differ according to the data/database and year of sampling. This measure is compiled by aggregating information for many crops and pesticides. While considerable uncertainty may exist for a single pesticide on a single crop, pesticide use data at such a highly aggregated level are considered quite accurate. Doane sampling plans and QA/QC procedures are available to the public at their website. More specific information about the data is proprietary and a subscription fee is required. Data are weighted and multiple regression procedure is used to adjust for known disproportionalities and ensure consistency with USDA and state acreage estimates

New/Improved Data or Systems: These are not EPA databases; thus improvements are not known in any detail at this time.

References: EPA Website; EPA Annual Report; Annual Performance Plan and Annual Performance Report, http://www.ams.usda.gov/science/pdp/download.htm; Doane Marketing Research, Inc.: http://www.doanemr.com; http://www.usda.gov/nass/pubs and http://www.usda.nass/nass/nassinfo; FFDCA Sec 408(a)(2); EPA Pesticide Registration Notice 97-3, September 4, 1997; Endangered Species Act.

FY 2007 Performance Measure:

- **Number of incidents and mortalities to terrestrial and aquatic wildlife caused by currently registered pesticides (PART measure)**

Performance Database: The Ecological Incident Information System (EIIS) is a national database of information on poisoning incidents of non-target plants and animals caused by pesticide use. The fields used include the number of incidents reported for each non-target plant or animal. The data used to report is the average for 3 years. Data are gathered on a calendar year basis and reported on a FY basis beginning in FY 2004. There is approximately 2 year data lag. The Environmental Fate and Effects staff for Pesticide Programs maintain this database.

Data Source: Data are extracted from written reports of fish and wildlife incidents submitted to the Agency by pesticide registrants under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Section 6(a)(2), as well as incident reports voluntarily submitted by state and Federal agencies involved in investigating such incidents.

Methods, Assumptions and Suitability: This measure helps to provide information on the effect of EPA's regulatory actions on the protection of fish and wildlife from acute toxic effects of pesticides. Incidents of fish and wildlife mortality caused by pesticides are summed annually and sums are reported as three-year moving averages. Incidents related to known misuse of pesticides and to pesticides not currently registered in the United States are excluded, as are incidents for which the cause is highly uncertain. This indicator assumes that changes in the total number of incidents reported to the Agency reflect changes in the total number of incidents that are occurring. Inherent in this is the assumption that a consistent effort is made to investigate and report incidents year after year. This indicator is suitable only if fish and wildlife mortality incidents are investigated and reported widely enough to provide adequate monitoring of incidents throughout the country, and if the level of effort in investigating and reporting incidents are reasonably consistent over time.

QA/QC Procedures: EPA adheres to its approved Quality Management Plan in ensuring the quality of the data. Before entering incident data in the database, a database program is used to screen for records already in the database with similar locations and dates. Similar records are then individually reviewed to prevent duplicate reporting. After each record is entered into the EIIS database, an incident report is printed that contains all the data entered into the database. A staff member, other than the one who entered the data, then reviews the information in the report and compares it to the original source report to verify data quality. Scientists using the incident database are also encouraged to report any inaccuracies they find in the database for correction.

Data Quality Review: Internally and externally data quality reviews related to data entry have been conducted. EPA follows a quality assurance plan for accurately extracting data from reports and entering it into the EIIS database. This quality assurance plan is described in Appendix D of the Quality Management Plan for pesticides programs. The American Bird Conservancy has reviewed data in the EIIS database for records related to bird kill incidents.

Data Limitations: This measure is designed to monitor trends in the numbers of acute poisoning events reported to the Agency. The reporting of incidents to the Agency is currently very limited. Very few fish and wildlife reports are being reported by pesticide registrants under the FIFRA 6(a)(2) requirement. This is because most fish and wildlife incidents are classified as "minor" under the current rule, and the registrants are required to report only aggregate data for these minor incidents. The aggregate data are inadequate for entering the incidents into EIIS and including them in this index because no details are reported on individual incidents, even if they are fish kills or bird kills. In 2004, only three fish kills and one wildlife kill were reported as "major" incidents with adequate data to include in this index. Incident reports voluntarily submitted from sources other than pesticide registrants also have been very scarce in recent years. Since 2003, only two state and regional government agencies have reported fish kill incidents to the Agency (the California Department of Fish and Game and the US Geological Survey) and only three have reported wildlife kills (the New York State Department of Environmental Conservation, the California Department of Fish and Game, and the Southeast Cooperative Wildlife Disease Study). Many states governments have informed the Agency that budget cuts have led to inadequate funding to investigate and report on fish and wildlife kills occurring in their states, making them unable to report these incidents to the EPA. Other states

may not be reporting because they are not aware that the EPA is collecting this information. In summary, the data are currently inadequate for monitoring national trends in incidents.

Error Estimate: Moving average counts of number of incidents per year may be interpreted as a relative index of the frequency of acute toxicity effects that pesticides are causing to fish and wildlife. The indicator numbers are subject reporting rates. If there is a change in incidents since the baseline year, it may be due to change in tracking/reporting of kills rather than change related to the use of a pesticides. Also, despite efforts to avoid duplicate counting of incidents, a few incidents likely have duplicate records in the EIIS database. A quality assurance review of bird kill incidents completed by the American Bird Conservancy in 2005 found five incidents with duplicate records, which will be corrected

New/Improved Data or Systems: The EPA is currently conducting a project with the American Bird Conservancy to improve the quality and quantity of data on bird kill caused by pesticides. This project should eventually result in additional reports of bird kill incidents being submitted to the Agency, but to date no additional incident reports have been obtained. The Environmental Fate and Effects Division of the Office of Pesticide Programs has begun a process to obtain an Information Collection Request (ICR) permit, which would allow soliciting state agencies for voluntary submittal of any incident reports that they produce.

References: The Ecological Incident Information System (EIIS) is an internal EPA database. Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Section 6(a)(2).
QMP: Quality Management Plan for the Office of Pesticides Program, May 20, 2000; Endangered Species Act.

FY 2007 Performance Measure:

- **Percentage of high-priority chemicals for which EPA has developed short-term exposure limits (Acute Exposure Guideline Levels [AEGL]). (PART measure)**

Performance Database: There is no database. Performance is measured by the cumulative number of chemicals with "Proposed", "Interim", and/or "Final" AEGL values as published by the National Academy of Sciences (NAS). The results are calculated on a fiscal year basis.

Data Source: EPA manages a Federal Advisory Committee Act (FACA) committee that reviews short term exposure values for extremely hazardous chemicals. The supporting data, from both published and unpublished sources and from which the AEGL values are derived, are collected, evaluated, and summarized by FACA Chemical Managers and Oak Ridge National Laboratory's scientists. Proposed AEGL values are published for public comment in the Federal Register. After reviewing public comment, interim values are presented to the AEGL Subcommittee of the National Academy of Sciences (NAS) for review and comment. After review and comment resolution, the National Research Council under the auspices of the National Academy of Sciences (NAS) publishes the values as final.

Methods, Assumptions, and Suitability: The work of the National Advisory Committee's Acute Exposure Guideline Levels (NAC/AEGL, formally chartered under the Federal Advisory Committee Act) adheres to the 1993 U.S. National Research Council/National Academies of

Sciences (NRC/NAS) publication *Guidelines for Developing Community Emergency Exposure Levels for Hazardous Substances*. NAC/AEGL, in cooperation with the National Academy of Sciences' Subcommittee on AEGLs, have developed standard operating procedures (SOPs), which are followed by the program. These have been published by the National Academy Press and are referenced below. The cumulative number of AEGL values approved as "proposed" and "interim" by the NAC/AEGL FACA Committee and "final" by the National Academy of Sciences represents the measure of performance. The work is assumed to be completed at the time of final approval of the AEGL values by the NAS.

QA/QC Procedures: QA/QC procedures include public comment via the Federal Register process; review and approval by the FACA committee; and review and approval by the NAS/AEGL committee and their external reviewers.

Data Quality Review: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: This is the first time acute exposure values for extremely hazardous chemicals have been established according to a standardized process and put through such a rigorous review.

References: Standing Operating Procedures for Developing Acute Exposure Guideline Levels for Hazardous Chemicals, National Academy Press, Washington, DC 2001 (http://www.nap.edu/books/030907553X/html/). NRC (National Research Council). 1993. Guidelines for Developing Community Emergency Exposure Levels for Hazardous Substances. Washington, DC: National Academy Press.

FY 2007 Performance Measure

- **Total EPA Cost per Chemical for which a Proposed AEGL data set is developed (PART measure)**

Performance Database: Complete budgetary information at the program and project level is maintained in EPA's Finance Central database. This database and other financial records are consulted each time the program reports performance results. In addition to Finance Central, OPPT maintains records on AEGL program income, expenditures and carry over from one year to the next; and on the number of FTE's allocated to the program. Information from these records is aggregated to determine total EPA cost per chemical for which a proposed AEGL data set is developed. The denominator of this ratio – number of proposed AEGL data sets – is tracked in separate records maintained by the program. Specifically, there is an Access database containing the approval dates for proposed AEGL values and a Wordperfect file, organized by fiscal year, that is used to record events in the AEGL process as they occur.

Data Source: EPA manages a Federal Advisory Committee Act (FACA) committee that reviews short term exposure values for extremely hazardous chemicals. The supporting data, from both published and unpublished sources and from which the AEGL values are derived, are collected, evaluated, and summarized by FACA Chemical Managers and Oak Ridge National Laboratory's scientists. Proposed AEGL values are published for public comment in the Federal Register and then referred to the National Academies of Science (NAS) for further review and action. Although proposed AEGLs are not considered final until so designated by the NAS, the proposed values are suitable for many purposes. This performance measure is tied to proposed values rather than to final ones because actions through the proposal stage of the AEGL process are largely under EPA's control whereas subsequent action to finalize the AEGL values is largely a matter within NAS jurisdiction.

Methods, Assumptions, and Suitability: The methods involved in developing and reporting on this performance measure largely consist of simple computational steps performed on data relating to AEGL cost and accomplishment. For example, it is necessary to track the number of FTE's assigned to the AEGL program and then find the associated labor cost by multiplying by standard cost-of-living factors. Likewise, the extramural cost associated with managing the program is determined by pulling cost and budgetary data from the relevant databases as described above, multiplying by 70% as an estimate of the proportion of staff and contractor resources devoted to proposed AEGL development, summing as needed, and adjusting for inflation. One assumption underlying these computations is that 70% is a reasonable estimate of the proposal stage's share of total cost devoted to AEGLs. The methods, simple as they are, seem highly suitable for the kinds of measurement to be performed.

QA/QC Procedures: QA/QC procedures for AEGL development include public comment via the Federal Register process; review and approval by the FACA committee; and review and approval by the NAS/AEGL committee and their external reviewers. AEGL documents are formally reviewed for QC purposes by designated contractors and EPA staff at critical junctures utilizing detailed checklists. Cost information from available records is also subjected to appropriate QA/QC controls.

Data Quality Review: This is a new performance measure and, therefore, there is no developed track record of review and correction. However, appropriate oversight of the measurement process will be provided. Information developed in the course of measurement will be presented to senior management within OPPT to address potential concerns related to technical outcomes and to provide quality oversight.

Data Limitations: No specific data limitations have been identified with respect to the information relied upon in developing or reporting this measure.

Error Estimate: Not applicable. This measure does not require inferences from statistical samples and therefore there is no estimate of statistical error.

New/Improved Data or Systems: Access databases, spreadsheets and other files are maintained and improved on an ongoing basis. A new database is being developed to document rationales

used to develop AEGL values. This new database should enhance the efficiency of AEGL development.

References: Please see www.epa.gov/oppt/aegl.

FY 2007 Performance Measures:

- **Annual reduction in the number of children aged 1-5 years with elevated blood lead levels (> or = 10 ug/dL).** ***This performance measure is a direct measure of Healthy People 2010 goal 8-11.*** **(PART measure)**

- **Percentage difference in the geometric mean blood level in low-income children 1-5 years old as compared to the geometric mean for non-low income children 1-5 years old. (PART measure)**

Performance Database: Data from the Centers for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES) is recognized as the primary database in the United States for national blood lead statistics. NHANES is a probability sample of the non-institutionalized population of the United States. Data are collected on a calendar year basis, and is currently released to the public in two year sets. The most current release is the data set for 2001-2002, released in early 2005. Blood lead levels are measured for participants who are at least one year old. The survey collects information on the age of the participant at the time of the survey.

Data Source: The National Health and Nutrition Examination Survey is a survey designed to assess the health and nutritional status of adults and children in the U.S. The survey program began in the early 1960s as a periodic study, and continues as an annual survey. The survey examines a nationally representative sample of approximately 5,000 men, women, and children each year located across the U.S. CDC's National Center for Health Statistics (NCHS) is responsible for the conduct of the survey and the release of the data to the public. NCHS and other CDC centers publish results from the survey, generally in CDC's Morbidity and Mortality Weekly Report (MMWR), but also in scientific journals. In recent years, CDC has published a National Exposure report based on the data from the NHANES. The most current National Exposure report was released on July 21, 2005, and is available at the web site http://www.cdc.gov/exposurereport/

Methods, Assumptions, and Suitability: Detailed interview questions cover areas related to demographic, socio-economic, dietary, and health-related questions. The survey also includes an extensive medical and dental examination of participants, physiological measurements, and laboratory tests. Specific laboratory measurements of environmental interest include: metals (e.g. lead, cadmium, and mercury), VOCs, phthalates, organophosphates (OPs), pesticides and their metabolites, dioxins/furans, and polyaromatic hydrocarbons (PAHs). NHANES is unique in that it links laboratory-derived biological markers (e.g. blood, urine etc.) to questionnaire responses and results of physical exams. For this performance measure, NHANES has been recognized as the definitive source. Estimates of the number of children 1-5 years with an elevated blood lead level based on NHANES have been published by CDC, most recently in May, 2005. (See

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5420a5.htm). Analytical guidelines issued by NCHS provide guidance on how many years of data should be combined for an analysis.

QA/QC Procedures: Background documentation is available at the NHANES web site at http://www.cdc.gov/nchs/nhanes.htm. The analytical guidelines are available at the web site http://www.cdc.gov/nchs/data/nhanes/nhanes_general_guidelines_june_04.pdf).

Data Quality Reviews: CDC follows standardized survey instrument procedures to collect data to promote data quality, and data are subjected to rigorous QA/QC review. Additional information on the interview and examination process can be found at the NHANES web site at http://www.cdc.gov/nchs/hnanes.htm

Data Limitations: NHANES is a voluntary survey and selected persons may refuse to participate. In addition, the NHANES survey uses two steps, a questionnaire and a physical exam. There are sometimes different numbers of subjects in the interview and examinations because some participants only complete one step of the survey. Participants may answer the questionnaire but not provide the more invasive blood sample. Special weighting techniques are used to adjust for non-response. Seasonal changes in blood lead levels cannot be assessed under the current NHANES design. Because NHANES is a sample survey, there may be no children with elevated blood lead levels in the sample, but still some children with elevated blood lead levels in the population.

Error Estimate: Because NHANES is based on a complex multi-stage sample design, appropriate sampling weights should be used in analyses to produce estimates and associated measures of variation. Recommended methodologies and appropriate weights are provided at the NHANES web site http://www.cdc.gov/nchs/nhanes.htm. Measurement error for the blood lead levels is anticipated.

New/Improved Data or Systems: NHANES has moved to a continuous sampling schedule, scheduled release of data, and scheduled release of National Exposure reports by CDC.

References: 1) the NHANES web site, http://www.cdc.gov/nchs/nhanes.htm; 2) the National Exposure report web site, http://www.cdc.gov/exposurereport/; 3) MMWR article with the most recent estimate of the number of children with elevated blood lead levels, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5420a5.htm; 4) summary information on children's blood lead levels from past NHANES, http://www.cdc.gov/nceh/lead/research/kidsBLL.htm#National%20surveys

FY 2007 Performance Measure:

- **Annual percentage of lead-based paint certification applications in Federally-managed states that require more than the 40 days of EPA effort to process (PART measure)**

Performance Database: The National Program Chemicals Division (NPCD) in the Office of Pollution Prevention and Toxics (OPPT) maintains the Federal Lead-Based Paint Program (FLPP) database, an electronic database of applications for certification by individuals and firms and applications for accreditation by training providers in states and tribal lands administered by a Federal lead program. The database provides a record of all applications for certification or accreditation for Federally-managed lead programs and the actions on those applications. The database is augmented by hard copy records of the original applications.

Data Source: The FLPP database is available internally to EPA Headquarters and Regional lead program staff who process the applications or oversee the processing. The database is maintained on an EPA Research Triangle Park (RTP), North Carolina server. Access to the database is granted by the Lead, Heavy Metals, and Inorganics Branch (LHMIB) in NPCD. Overall maintenance of the database and periodic improvements are handled by a contractor, currently ICF Consulting, located in Fairfax, Virginia. Data entry of application data is conducted by a second contractor, currently Optimus Corporation, located in Silver Spring, Maryland. Optimus Corporation maintains the file of the original applications. Each EPA Regional office maintains a file of copies of the original applications for that region.

Methods, Assumptions and Suitability: The number of applications for certification in Federally-managed states and tribal lands is approximately 3000 per year. Each of these applications is processed. Certification is issued if all criteria are met. Some applications may be returned to the applicant or withdrawn by the applicant. For the applications that are fully processed, the length of time for EPA processing can be determined from date fields in the FLPP database. Accordingly, a census of all the fully processed applications for certification can be conducted, and the percentage of applications that took more than the prescribed number of days (e.g., 40) of EPA effort to process can be computed based on this census. The census is conducted every six months, and the annual percentage calculated appropriately from the six month percentages.

QA/QC Procedures: NPCD has an approved Quality Management Plan in place, dated January 2005. Applications and instructions for applying for certification and accreditation are documented and available at the web site http://www.epa.gov/lead/traincert.htm. Documentation for the FLPP database is maintained internally at EPA and is available upon request.

Data Quality Reviews: The FLPP database is an internal EPA database, maintained for the purpose of processing and tracking applications. The database is interactive, and operational usage in processing applications by Headquarters and the Regional offices provides ongoing quality reviews.

Data Limitations: Applications that were returned to the applicant or withdrawn by the applicant are out of scope for this performance measure.

Error Estimate: There is no sampling error in this performance measure, because it is based on a census of all applicable records.

New/Improved Data or Systems: The FLPP database is scheduled to undergo improvements in the next few years. The performance measurement system will help determine if there is a change in timeliness after the improvements are implemented.

References: 1) Quality Management Plan for National Program Chemicals Division, January 2005; 2) FLPP database documentation; 3) URL for Applications and Instructions, http://www.epa.gov/lead/traincert.htm.

FY 2007 Performance Measure:

- **Reduce the potential for risks from leaks and spills by ensuring the safe disposal of large capacitors and transformers containing polychlorinated biphenyls (PCBs)**

Performance Database: PCB Annual Report Database. The results are calculated on a calendar year (CY) basis. Two-year data lag and results for CY 06 will not be available until 2008.

Data Source: Annual Reports from commercial storers and disposers of PCB Waste.

Methods, Assumptions, and Suitability: Data provide a baseline for the amount of safe disposal of PCB waste annually. By ensuring safe disposal of PCBs in equipment such as transformers and capacitors coming out of service, and contaminated media such as soil, and structures from remediation activities, the Agency is reducing the exposure risk of PCBs that are either already in the environment or may be released to the environment through spills or leaks.

QA/QC Procedures: The Agency reviews, transcribes, and assembles data into the Annual Report Database.

Data Quality Reviews: The Agency contacts data reporters, when needed, for clarification of data submitted.

Data Limitations: Data limitations include missing submissions from commercial storers and disposers, and inaccurate submissions. PCB-Contaminated Transformers, of PCB concentrations 50 to 499 parts per million (ppm), and those that are 500 ppm PCBs or greater are not distinguished in the data. Similarly, large and small capacitors of PCB waste may not be differentiated. Data are collected for the previous calendar year on July 1 of the next year creating a lag of approximately one year. Despite these limitations, the data do provide the only estimate of the amount of PCB waste disposed annually.

Error Estimate: Not available.

New/Improved Data or Systems: None

References: U.S EPA, Office of Pollution Prevention and Toxics, National Program Chemicals Program, PCB Annual Report for Storage and Disposal of PCB Waste.

FY 2007 Performance Measure:

- **Annual Percent reduction in relative risk index for chronic human health associated with environmental releases of industrial chemicals in commerce as measured by Risk Screening Environmental Indicators (RSEI) Model (PART measure)**

Performance Database: The RSEI Model uses annual reporting from individual industrial facilities along with a variety of other information to evaluate chemical emissions and other waste management activities. RSEI incorporates detailed data from EPA's Toxics Release Inventory (TRI) and Integrated Risk Information System, the U.S. Census, and many other sources. Due to a two year TRI data lag, performance data will be unavailable for the FY 2006 Annual Performance Report. The data are based on calendar year.

Data Source: The RSEI model incorporates data on chemical emissions and transfers and facility locations from EPA's Toxics Release Inventory; chemical toxicity data from EPA's Integrated Risk Information System; stack data from EPA's AIRS Facility Subsystem and National Emissions Trends Database and the Electric Power Research Institute; meteorological data from the National Climatic Data Center; stream reach data from EPA's Reach File 1 Database; data on drinking water systems from EPA's Safe Drinking Water Information System; fishing activity data from U.S. Fish and Wildlife; exposure factors from EPA's Exposure Factor Handbook; and population data from the U.S. Census Bureau.

Methods, Assumptions and Suitability: The RSEI Model generates unique numerical values known as "Indicator Elements" using the factors pertaining to surrogate dose, toxicity and exposed population. Indicator Elements are unitless (like an index number, they can be compared to one-another but do not reflect *actual* risk), but proportional to the modeled relative risk of each release (incrementally higher numbers reflect greater estimated risk). Indicator Elements are risk-related measures generated for every possible combination of reporting facility, chemical, release medium, and exposure pathway (inhalation or ingestion). Each Indicator Element represents a unique release-exposure event and together these form the building blocks to describe exposure scenarios of interest. These Indicator Elements are summed in various ways to represent the risk-related results for releases users are interested in assessing. RSEI results are for comparative purposes and only meaningful when compared to other scores produced by RSEI. The measure is appropriate for year-to-year comparisons of performance. Depending on how the user wishes to aggregate, RSEI can address trends nationally, regionally, by state or smaller geographic areas.

QA/QC Procedures: TRI facilities self-report release data and occasionally make errors. TRI has QC functions and an error-correction mechanism for reporting such mistakes. EPA updates off-site facility locations on an annual basis using geocoding techniques.

Data Quality Reviews: RSEI depends upon a broad array of data resources, each of which has gone through a quality review process tailored to the specific data and managed by the providers of the data sources. RSEI includes data from the Toxics Release Inventory (TRI), Integrated Risk Information System (IRIS), U.S. Census, etc. All were collected for regulatory or programmatic purposes and are of sufficient quality to be used by EPA, other Federal agencies, and state

regulatory agencies. Over the course of its development, RSEI has been the subject of three reviews by EPA's Science Advisory Board (U.S. EPA Office of Pollution Prevention and Toxics, Risk Screening Environmental Indicators Model, Peer Reviews. Described at http://www.epa.gov/opptintr/rsei/faqs.html). The RSEI model has undergone continuous upgrading since the 1997 SAB Review. Toxicity weighting methodology was completely revised and subject to a second positive review by SAB (in collaboration with EPA's Civil Rights program); air methodology was revised and groundtruthed using New York data to demonstrate high confidence; water methodology has been revised in collaboration with EPA's Water program. When the land methodology has been
reviewed and revised, EPA will have completed its formal, written response to the 1997 SAB Review.

Data Limitations: RSEI relies on data from a variety of EPA and other sources. TRI data may have errors that are not corrected in the standard TRI QC process. In the past, RSEI has identified some of these errors and corrections have been made by reporting companies. Drinking water intake locations are not available for all intakes nationwide.
In coastal areas, Publicly Owned Treatment Works (POTW) water releases may go directly to the ocean, rather than nearby streams. EPA is in the process of systematically correcting potential errors regarding POTW water releases. These examples are illustrative of the data quality checks and methodological improvements that are part of the RSEI development effort. RSEI values are recalculated on an annual basis, and, resources permitting, all data sources are updated annually.

Error Estimate: In developing the RSEI methodology, both sensitivity analyses and
groundtruthing studies have been used to address model accuracy (documentation is provided on the RSEI Home Page - www.epa.gov/opptintr/rsei/). For example, groundtruthing of the air modeling performed by RSEI compared to site-specific regulatory modeling done by the state of New York showed virtually identical results in both rank order and magnitude. However, the complexity of modeling performed in RSEI, coupled with un-quantified data limitations, limits a precise estimation of errors that may either over- or under-estimate risk-related results.

New/Improved Data or Systems: The program regularly tracks improvements in other Agency databases (e.g., SDWIS and Reach File databases) and incorporates newer data into the RSEI databases. Such improvements can also lead to methodological modifications in the model. Corrections in TRI reporting data for all previous years are captured by the annual updates of the RSEI model.

References: The methodologies used in RSEI were first documented for the 1997 review by the EPA Science Advisory Board. The Agency has provided this and other updated technical documentation on the RSEI Home Page. (RSEI Home Page - http://www.epa.gov/opptintr/rsei/)
U.S. EPA Office of Pollution Prevention and Toxics, Risk Screening Environmental Indicators Model, Peer Reviews. Described at http://www.epa.gov/opptintr/rsei/faqs.html
RSEI Methodology Document (describes data and methods used in RSEI Modeling)
http://www.epa.gov/opptintr/rsei/docs/method2004.pdf RSEI User's Manual (PDF, 1.5 MB) explains all of the functions of the model, the data used, and contains tutorials to walk the new user through common RSEI tasks (http://www.epa.gov/opptintr/rsei/docs/users_manual.pdf).

A more general overview of the model can be found in the RSEI Fact Sheet (PDF, 23 KB) (http://www.epa.gov/opptintr/rsei/docs/factsheet_v2-1.pdf).
There are also seven Technical Appendices that accompany these two documents and provide additional information on the data used in the model. The Appendices are as follows: Technical Appendix A (PDF, 121 KB) - Listing of All Toxicity Weights for TRI Chemicals and Chemical Categories Technical Appendix B (PDF, 290 KB) - Physicochemical Properties for TRI Chemicals and Chemical Categories
Technical Appendix C (PDF, 40 KB) - Derivation of Model Exposure Parameters
Technical Appendix D (PDF, 71 KB) - Locational Data for TRI Reporting Facilities and Off-site Facilities Technical Appendix E (PDF, 44 KB) - Derivation of Stack Parameter Data Technical Appendix F (PDF, 84KB) - Summary of Differences Between RSEI Data and TRI Public Data Release

FY 2007 Performance Measure:

- **Number of new chemicals or microorganisms introduced into commerce that pose an unreasonable risk to workers, consumers or the environment (PART measure)**

Performance Database: Implementation of this measure will require the use of several EPA databases: Confidential Business Information Tracking System (CBITS), pre-manufacture notice (PMN) CBI Local Area Network (LAN), 8(e) database (ISIS), and the Focus database. The following information from these databases will be used collectively in applying this measure:
• CBITS: Tracking information on Pre-Manufacture Notices (PMNs) received;
• PMN CBI LAN: Records documenting PMN review and decision, assessment reports on chemicals submitted for review. In addition, the information developed for each PMN is kept in hard copy in the Confidential Business Information Center (CBIC);
• ISIS: Data submitted by industry under the Toxic Substances Control Act (TSCA) Section 8(e). TSCA 8(e) requires that chemical manufacturers, processors, and distributors notify EPA immediately of new (e.g. not already reported), unpublished chemical information that reasonably supports a conclusion of substantial risk. TSCA 8(e) substantial risk information notices most often contain toxicity data but may also contain information on exposure, environmental persistence, or actions being taken to reduce human health and environmental risks. It is an important information-gathering tool that serves as an early warning mechanism;
• Focus: Rationale for decisions emerging from Focus meeting, including decisions on whether or not to drop chemicals from further review.

Measurement results are calculated on a fiscal-year basis and draw on relevant information received over the 12-month fiscal year.

Data Source: The Office of Pollution Prevention and Toxics (OPPT), the office responsible for the implementation of the TSCA, will compare data submitted under TSCA Section 8(e) with previously-submitted new chemical review data (submitted under TSCA Section 5 and contained in the PMN) to determine the number of instances in which EPA failed to prevent the introduction of new chemicals or microorganisms into commerce which pose an unreasonable risk to workers, consumers or the environment. Inconsistencies between the 8(e) and previously-

submitted new chemical review data will be evaluated by applying the methods and steps outlined below to determine whether the inconsistencies signify an "unreasonable risk."

Methods, Assumptions, and Suitability: EPA's methods for implementing this measure involve determining whether EPA failed to prevent the introduction of chemicals or microorganisms into commerce that pose an unreasonable risk to workers, consumers or the environment, based on comparisons of 8(e) and previously-submitted new chemical review data. The "unreasonable risk" determination is based on consideration of (1) the magnitude of risks identified by EPA, (2) limitations on risk that result from specific safeguards applied, and (3) the benefits to industry and the public expected to be provided by the new chemical substance. In considering risk, EPA looks at anticipated environmental effects, distribution and fate of the chemical substance in the environment, patterns of use, expected degree of exposure, the use of protective equipment and engineering controls, and other factors that affect or mitigate risk. These are the steps OPPT will follow in comparing the 8(e) data with the previously-submitted new chemical review data.

1. Match all 8(e) submissions in the 8(e) database with associated TSCA Section 5 notices. TSCA Section 5 requires manufacturers to give EPA a 90-day advance notice (via a pre-manufacture notice or PMN) of their intent to manufacture and/or import a new chemical. The PMN includes information such as specific chemistry identity, use, anticipated production volume, exposure and release information, and existing available test data. The information is reviewed through the New Chemicals Program to determine whether action is needed to prohibit or limit manufacturing, processing, or use of a chemical.
2. Characterize the resulting 8(e) submissions by the PMN review phase. For example, the 8(e) submissions were received: a) before the PMN notice was received by EPA, b) during the PMN review process, or c) after the PMN review was completed.
3. Review of 8(e) data will focus on 8(e)s received after the PMN review period was completed.
4. Comparison of hazard evaluation developed during PMN review with associated 8(e) submission.
5. Report on the accuracy of the initial hazard determination
6. Revised risk assessment developed to determine if there was an unreasonable risk based on established risk assessment and risk management guidelines.

The databases used and the information retrieved are directly applicable to this measurement and therefore suitable for measurement purposes.

QA/QC Procedures: OPPT has in place a signed Quality Management Plan ("Quality Management Plan for the Office of Pollution Prevention and Toxics; Office of Prevention, Pesticides and Toxic Substances;" June 2003) and will ensure that those standards and procedures are applied to this effort.

Data Quality Reviews: This is a new performance measure and, therefore, there is no developed track record of review and correction. However, appropriate oversight of the measurement process will be provided. Information developed in the course of measurement will be presented to senior management within OPPT to address potential concerns related to technical outcomes and to provide quality oversight. In addition, the National Pollution Prevention and Toxics Advisory Council (NPPTAC), which consists of external experts providing independent review and direction to OPPT, has provided comment on this measure.

Data Limitations: There are some limitations of EPA's review which result from differences in the quality and completeness of 8(e) data provided by industry; for example, OPPT cannot evaluate submissions that do not contain adequate information on chemical identity. The review is also affected in some cases by a lack of available electronic information. In particular the pre-1996 PMN cases are only retrievable in hard copy and may have to be requested from the Federal Document Storage Center. This may introduce some delays to the review process.

Error Estimate: Not applicable. This measure does not require inferences from statistical samples and therefore there is no estimate of statistical error. OPPT will review all 8(e) submissions received in the year with corresponding previously-submitted new chemical review data, and not a sample of such submissions.

New/Improved Data or Systems: OPPT is currently developing an integrated, electronic system that will provide real time access to prospective PMN review.

References: OPPT New Chemicals Program
http://www.epa.gov/opptintr/newchems/, TSCA Section 8(e) – Substantial Risk
http://www.epa.gov/opptintr/chemtest/sect8e.htm,
http://www.epa.gov/opptintr/tsca8e/index/htm
"Quality Management Plan for the Office of Pollution Prevention and Toxics; Office of Prevention, Pesticides and Toxic Substances;" June 2003.

FY 2007 Performance Measure:

- **Percent change relative to base year in cost savings from new chemical prescreening. (PART measure)**

Performance Database: Implementation of this measure will require the use of several EPA databases, all of which play a role in tracking premanufacture notices (PMNs) and the action EPA decides to take on such notices. The principal databases involved in PMN tracking, with separate identification of prescreened chemicals, are:

- Chemical Control Division tracking database: Records basic identifying and status information on each PMN submitted to EPA, including name of submitter, identity of technical contact at company, actions taken by EPA. Enables chemicals to be tracked quickly and easily through the PMN review process.

- Management Information Tracking System (MITS): Contains non-CBI data on all PMNs, including chemical identification and actions taken by EPA.

- New Chemicals Focus meeting database: Contains information on the decisions reached at Focus meetings, including whether to drop chemical from further review, to pursue regulation under the Toxic Substances Control Act (TSCA) Section 5(e) to prohibit or limit activities associated with the new chemical or to pursue regulation under a non-5(e) Significant New Use Rule (SNUR) to require

manufacturers, importers and processors to notify EPA at least 90 days before beginning any activity that EPA has designated as a "significant new use," or, alternatively, to refer the chemical for full-scale standard review. It is critical to know the number and percentage of PMNs going to these outcomes in order to perform base year cost savings calculations in support of the cost savings measure.

- Sustainable Futures prescreening tracking databases: Contain information on PMNs which display evidence of chemical prescreening using OPPT screening methods, including data on the types of assessments and model evaluations performed by the submitter, and contact information on Sustainable Futures participants including date(s) attended EPA training.

- Measurement results are calculated on a fiscal year basis and draw upon relevant information collected over the 12-month fiscal year.

Data Source: The major data sources involved in this measurement are fully described under "Performance Database," above. No external data sources play a significant role in the calculation of measurement results.

Methods, Assumptions and Suitability: EPA measures percent change in cost savings as a result of chemical prescreening relative to a base year by: 1) determining the base year pre-screening rate and base year cost savings; 2) calculating the current year prescreening rate (prescreened PMNs as a percentage of total PMNs) and; 3) determining the actual percent change in cost savings due to prescreening by multiplying the base year cost savings by the ratio of the current year prescreening rate to the base year prescreening rate. Finally, the actual percent change in cost savings relative to the base year can be compared to the target percent change of 6.67%. This procedure assumes, quite reasonably, that cost savings from prescreening will generally change in rough proportion to the change in the prescreening rate.

The methods used in calculating base year information are as follows:

- Determine base year prescreening rate by checking the data systems described above to obtain the number of new prescreened chemicals going through the PMN review process and the total number of chemicals undergoing such review. The prescreening rate is simply the ratio of prescreened chemicals to total chemicals undergoing PMN review.

Determine base year cost savings by :

- Checking the relevant databases to determine the number and percentage of base year PMNs that are (a) prescreened PMNs and (b) non-prescreened PMNs

- Estimating the number of prescreened PMNs that would have gone to regulation or standard review if there were no prescreening program (this is done by multiplying the number of prescreened PMNs by the percentage of non-

prescreened PMNs that go to one of the "post-Focus meeting outcomes" of standard review, regulation under TSCA Section 5(e), or issuance of a non-5(e) SNUR)

- Subtracting the number of actual prescreened PMNs going to one of the post-Focus meeting outcomes from the projected number derived in the previous step, is the estimated number of PMNs avoiding a post-Focus meeting outcome. The rationale is that some some pre-screened PMNs still end up requiring post-Focus action, but at a lower rate than for PMNs which are not pre-screened. The hypothetical number estimated in this step, the difference between the projected and actual numbers of pre-screened PMNs requiring a post-Focus meeting outcome, represents the number of cases to have avoided post-Focus action as a result of pres-screening.

- Multiplying the number of cases estimated to have avoided post-Focus action as a result of pre-screening by unit cost factors to obtain estimates of the cost savings realized by avoidance of post-Focus meeting outcomes due to prescreening. (unit cost factors are generated separately from information/estimates maintained by EPA on the labor hours (Agency and contractor) associated with each post-Focus meeting outcome and the EPA cost per labor hour)

- Summing the cost savings realized by avoidance of specified post-Focus meeting outcomes to arrive at total cost savings for the base year.

QA/QC Procedures: OPPT has in place a signed Quality Management Plan ("Quality Management Plan for the Office of Pollution Prevention and Toxics; Office of Prevention, Pesticides and Toxic Substances," June 2003) and will ensure that those standards and procedures are applied to this effort.

Data Quality Reviews: This is a new performance measure and, therefore, there is no developed record of review and correction. However, appropriate oversight of the measurement process will be provided. Information developed in the course of measurement will be presented to senior management within OPPT to address potential concerns related to technical outcomes and to provide quality oversight.

Data Limitations: No specific data limitations have been identified with respect to the measure presented here, except to the extent that the measure requires certain assumptions, discussed above, in addition to inputs of hard data.

Error Estimate: Not applicable. This measure does not require inferences from statistical samples and therefore there is no estimate of statistical error.

New/Improved Data or Systems: OPPT is currently developing an integrated electronic system that will provide real time access to prospective PMN review.

References: Additional information on EPA's New Chemicals program for TSCA Section 5 can be found at http://www.epa.gov/oppt/newchems/index.htm.

FY 2007 Performance Measure:

- **Percentage of High Production Volume (HPV) chemicals identified as priority concerns through assessment of Screening Information Data Set (SIDS) and other information with risks eliminated or effectively managed**

Performance Database: EPA will track the number of agency actions (e.g., regulatory, voluntary), targeting risk elimination or management of high production volume chemicals, using internal program databases or the Agency's Regulation and Policy Information Data System (RAPIDS). Many types of Agency actions qualify as risk management or elimination actions. Issuance of a Significant New Use Rule (SNUR) under TSCA is an example of regulatory action that can be tracked by the RAPIDS Promulgation Data field. An example of a non-regulatory risk management/elimination action is a written communication from EPA to chemical manufacturers/users indicating the Agency's concerns and suggesting but not requiring actions to address chemical risks (chemical substitution, handling protections, etc.). These actions would be tracked by monitoring internal communications files. The results are calculated on a calendar-year basis.

Data Source: RAPIDS stores official Agency data on progress of rule-making and other policy program development efforts. Data are supplied by EPA programs managing these efforts. For voluntary actions not tracked in RAPIDS, performance data are tracked internally by program managers.

Methods, Assumptions and Suitability: As EPA identifies HPV chemicals that are priorities for risk management action, following protocols currently under development, the Agency will commence regulatory or non-regulatory actions to address identified risks. All such actions will be recorded for the HPV chemical(s) subject to those actions, enabling EPA to report on progress in responding to the risks on a chemical- or chemical-category-specific basis. This annual performance measures (APM) commits the Agency to eliminate or effectively manage all such risks. Using data contained in RAPIDS, in the case of regulatory risk management action, EPA's progress towards meeting this APM will be documented by the sequence of formal regulatory development steps documented in that system. Where risk management action takes nonregulatory form, such as issuance of advisory communications to chemical manufacturers or users, progress toward meeting this APM will be tracked by internal files documenting such actions. The definition of risk is being addressed in the development of the protocols used in the HPV screening/prioritization process.

QA/QC Procedures: RAPIDS entries are quality assured by senior Agency managers.

Data Quality Reviews: RAPIDS entries are reviewed by EPA's Regulatory Management Staff.

Data Limitations: N/A

Error Estimate: N/A

New/Improved Performance Data or Systems: N/A

References: None

FY 2007 Performance Measure:

- **The cumulative number of chemicals for which VCCEP data needs documents are issued by EPA in response to industry-sponsored Tier I risk assessments.**

Performance Database: Internal VCCEP program activity tracking database. Data needs documents are issued by EPA to conclude work on all Tier I submissions. Documents may indicate data are sufficient to reasonably demonstrate that children are not subject to significant risks. Documents also may indicate that additional assessment and associated data development are required, commencing Tier 2 work. The results are calculated on a calendar-year basis.

Data Source: Formal EPA files of VCCEP Tier I data needs communications. Data needs are also subject to peer review, results of which are posted and made public on the Toxicology Excellence for Risk Assessment website found at http://www.tera.org/peer/MeetingReports.html

Methods, Assumptions and Suitability: Information is tracked directly through internal record-keeping systems. No models or assumptions or statistical methods are employed.

QA/QC Procedures: The VCCEP program operates under Information Quality Guidelines as found at http://www.epa.gov/quality/informationguidelines/

Data Quality Reviews: The VCCEP program operates under Information Quality Guidelines as found at http://www.epa.gov/quality/informationguidelines/

Data Limitations: None known

Error Estimate: N/A

New/Improved Performance Data or Systems: None

References: http://www.epa.gov/chemrtk/vccep/index.htm

FY 2007 Performance Measure:

- **Number of risk management plan audits completed**

Performance Database: There is no database for this measure.

Data Source: EPA's Regional offices and the states provide the data to EPA headquarters.

Methods, Assumptions and Suitability: Data are collected and analyzed by surveying EPA's Regional offices to determine how many audits of facilities' risk management plans (RMPs) have been completed.

QA/QC Procedures: Data are collected from states by EPA's Regional offices, with review at the Regional and Headquarters' levels.

Data Quality Review: Data quality is evaluated by both Regional and Headquarters' personnel.

Data Limitations: Data quality is dependent on completeness and accuracy of the data provided by state programs.

Error Estimate: Not calculated.

New/Improved Data or Systems: N/A

Reference: N/A

GOAL 4 OBJECTIVE 2

FY 2007 Performance Measures:

- **Brownfields properties assessed**
- **Number of properties cleaned up using Brownfields funding**
- **Acres of Brownfields property available for reuse**
- **Number of jobs leveraged from Brownfields activities**
- **Percentage of Brownfields job training trainees placed**
- **Billions of dollars of cleanup and redevelopment funds leveraged at Brownfields sites**
- **Acres of Brownfields made ready for reuse per million dollars.**

Performance Database: The Assessment, Cleanup and Redevelopment Exchange System (ACRES) contains the performance information identified in the above measures.
Key fields related to performance measures include:
Properties with Assessment Completed with Pilot/Grant Funding
Properties assessed with Targeted Brownfields Assessment Funding
Properties with Cleanup Complete
Acres Made Ready for Reuse
Cleanup/Redevelopment Jobs Leveraged
Assessment/Cleanup/Redevelopment Dollars Leveraged
Number of Participants Completing Training
Number of Participants Obtaining Employment

Data Source: Data are extracted from quarterly reports and property profile forms prepared by assessment, cleanup, revolving loan fund (RLF), job training, and State and Tribal 128 Voluntary Response Program cooperative agreement award recipients. Information on Targeted Brownfields Assessments is collected from EPA Regions.

Methods, Assumptions and Sustainability: Cooperative agreement award recipients submit reports quarterly (except for 128(a)) and property profile forms to EPA. Performance measure data are extracted from these documents by an EPA contractor. Data are then forwarded to Regional Pilot managers for review and finalization. Given the reporting cycle and the data entry/QA period, there is typically a six month data lag for BMS data.

Note that accomplishments reported by Brownfields Assessment Grantees, Brownfields Cleanup Grantees, Brownfields Revolving Loan Fund Grantees, Brownfields Job Training Grantees, Regional Targeted Brownfields Assessments, and State and Tribal 128 Voluntary Response Program Grantees all contribute towards these performance measures. "Number of Brownfields properties assessed" is an aggregate of assessments completed with Assessment Grant funding, Regional Targeted Brownfields Assessment funding, and State and Tribal 128 Voluntary Response Program funding. Number of Brownfields properties cleaned up is an aggregate of properties cleaned up by RLF Grantees, Cleanup Grantees, and State and Tribal 128 Voluntary Response Program Grantees. "Number of Acres Made Ready for Reuse" is an aggregate of acreage assessed that does not require cleanup and acreage cleaned up as reported by Assessment Grantees, Regional Targeted Brownfields Assessments, Cleanup Grantees, RLF Grantees, and State and Tribal 128 Voluntary Response Program Grantees. “Number of cleanup and redevelopment jobs leveraged” is the aggregate of jobs leveraged by Assessment, Cleanup and RLF Grantees. “Amount of cleanup and redevelopment funds leveraged at Brownfields properties” is the aggregate of funds leveraged by Assessment, Cleanup and RLF Grantees. “Percentage of Brownfields job training trainees placed” is based on the “Number of Participants Completing Training” and the “Number of Participants Obtaining Employment” reported by Job Training Grantees.

QA/QC Procedures: Data reported by cooperative award agreement recipients are reviewed by EPA Regional project officers or project managers for accuracy. Reports are produced monthly with detailed data trends analysis.

Data Quality Reviews: No external reviews.

Data Limitations: All data provided voluntarily by grantees.

Error Estimate: NA

New/Improved Data or Systems: The Brownfields Program has developed the Assessment Cleanup and Redevelopment Exchange System (ACRES database) to improve data collection and management. The Brownfields Program will implement online QA for Regional project officers using the ACRES database in FY 2006. The Program is also in the process of amending the OMB ICR to gather information from State and Tribal 128 Voluntary Response Program grantees.

References: none.

GOAL 4 OBJECTIVE 3

FY 2007 Performance Measure:

- **Acres of habitat protected or restored in National Estuary Program (NEP) study areas [Ocean and Coastal PART measure]**
- **Program dollars per acre of habitat protected or restored [Ocean and Coastal PART efficiency measure]**

Performance Database: The Office of Wetlands Oceans and Watersheds has developed a standardized format for data reporting and compilation, defining habitat protection and restoration activities and specifying habitat categories. The key field used to calculate annual performance is habitat acreage. Annual results have been reported since 2001 for the NEP (results are calculated on a fiscal year basis).

Information regarding habitat protection is accessible on a web page that highlights habitat loss/alteration, as well as the number of acres protected and restored by habitat type http://www.epa.gov/owow/estuaries/pivot/overview/intro.htm. This allows EPA to provide a visual means of communicating NEP performance and habitat protection and restoration progress to a wide range of stakeholders and decision-makers.

Data Source: NEP documents such as annual work plans (which contain achievements made in the previous year), annual progress reports and other implementation tracking materials, are used to document the number of acres of habitat restored and protected. EPA aggregates the data provided by each NEP to arrive at a national total for the entire Program. EPA is confident that the data presented are as accurate as possible Each NEP reviews the information prior to reporting to EPA. In addition, EPA conducts regular reviews of NEP implementation to help ensure that information provided in these documents is accurate, and progress reported is in fact being achieved.

Methods, Assumptions and Suitability: Measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported,-or of the estuary overall, but it is a suitable measure of on-the-ground progress. Habitat acreage does not necessarily correspond one-to-one with habitat quality, nor does habitat (quantity or quality) represent the only indicator of ecosystem health. Nevertheless, habitat acreage serves as an important surrogate and a measure of on-the-ground progress made toward EPA=s annual performance goal of habitat protection and restoration in the NEP. EPA has defined and provided examples of Aprotection@ and Arestoration@ activities for purposes of measure tracking and reporting (see citation for the PIVOT website in references below.) "Restored and protected" is a general term used to describe a range of activities. The term is interpreted broadly to include created areas, protected areas resulting from acquisition, conservation easement or deed restriction, submerged aquatic vegetation coverage increases, permanent shellfish bed openings, and anadromous fish habitat increases.

The NEP "Habitat Acres Protected or Restored" efficiency measure will be calculated by dividing the total ocean and coastal protection program dollars by the total NEP acres protected or restored. The measure is based on the habitat data collected by the NEPs, as described above and reported in the annual habitat measure), and the total program dollars, which is the sum of the NEP/Coastal budget (including the additional funds for Long Island Sound), the Marine Pollution budget, and the program match as reported by the NEPs.

QA/QC Procedures: Primary data are prepared by the staff of the NEP based on their own reports and from data supplied by other partnering agencies/organizations (that are responsible for implementing the action resulting in habitat protection and restoration). The NEP staff are requested to follow EPA guidance to prepare their reports, and to verify the numbers. EPA then confirms that the national total accurately reflects the information submitted by each program. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001. EPA requires that each organization prepare a document called a Quality Management Plan (QMP) that documents the organization's data quality policy, which addresses the quality, generation and use of the organization's data and identifies the environmental programs to which the quality system applies (e.g., programs that rely on the collection or use of environmental data.)

Data Quality Review: No audits or quality reviews conducted yet.

Data Limitations: It is still early to determine the full extent of data limitations. Current data limitations include: information that may be reported inconsistently (based on different interpretations of the protection and restoration definitions), acreage that may be miscalculated or misreported, and acreage that may be double counted (same parcel may also be counted by partnering/implementing agency or need to be replanted multiple years). In addition, measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported (particularly in the year of reporting), but is rather a measure of on-the-ground progress made by the NEPs.

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: In 2004, NEP provided latitude and longitude data (where possible) for each project. These data are then mapped to highlight where these projects are located in each NEP study area. Not only does this assist both the individual NEP and EPA in obtaining a sense of geographic project coverage, but it provides a basis from which to begin exploring cases where acreage may be double-counted by different agencies. An on-line reporting system is also being developed for the NEPs= use that will assist in tracking habitat projects, and will help reduce EPA=s QA/QC time. Currently, this system is scheduled to be in place by September 2005.

References: Aggregate national and regional data for this measurement, as well as data submitted by the individual National Estuary Programs, is displayed numerically, graphically, and by habitat type in the Performance Indicators Visualization and Outreach Tool (PIVOT). PIVOT data are publicly available at http://www.epa.gov/owow/estuaries/pivot/overview/

intro.htm. The Office of Water Quality Management Plan (July 2001) is available on the Intranet at http://intranet.epa.gov/ow/infopolicy.html.

FY 2007 Performance Measure:

- **By 2008, working with partners, achieve a net increase of 400,000 acres of wetlands**

Performance Database: The National Wetlands Inventory (NWI) of the U.S. Fish and Wildlife Service produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. This information is used by Federal, State, and local agencies, academic institutions, U.S. Congress, and the private sector. The Emergency Wetland Resources Act of 1986 directs the Service to map the wetlands of the United States. The NWI has mapped 89 percent of the lower 48 states, and 31 percent of Alaska. The Act also requires the Service to produce a digital wetlands database for the United States. About 42 percent of the lower 48 states and 11 percent of Alaska are digitized. Congressional mandates require the U.S. Fish and Wildlife Service to produce a status and trends reports to Congress at ten-year intervals.

The status and trends report is designed to provide recent and comprehensive estimates of the abundance of wetlands in the 48 conterminous States. This status and trends report indicates whether there is an actual increase in wetland acreage or if wetlands are continuing to decrease. Up-to-date status and trends information is needed to periodically evaluate the efficacy of existing Federal programs and policies, identify national or regional wetland issues, and increase public awareness of and appreciation for wetlands.

The last status and trends report[26] provided the most recent and comprehensive estimates of the current gains and losses for different types of wetlands in the United States on public and private lands from calendar year 1986 to 1997. In calendar year 1997, there were an estimated 105.5 million acres of wetlands in the conterminous United States. Of this total, 100.5 million acres (95 percent) are freshwater wetlands and 5 million acres (5 percent) are saltwater wetlands.

The President directed in his Earth Day 2004 announcement that the next National Wetlands Inventory update, status and trends report, should be completed by the end of 2005, five years ahead of the current schedule, and asked that the updates be done more frequently thereafter. The next Status and Trends Report is expected to be released by the Fish and Wildlife Service in January 2006, and every five years thereafter. This new information will show whether, nationally, we are making progress against the net gain measure and should inform Federal, State, Tribal, local government programs' policies and decision making.

Data Source: The National Status and Trends Report is developed and published by the U.S. Fish and Wildlife Service. This is the only Federal study that provides statistically valid estimates with a published standard error for all wetlands in the conterminous United States. Aerial imagery is the primary data source, and it is used with reliable collateral data such as topographic maps, coastal navigation charts, published soil surveys, published wetland maps,

[26] Dahl, T.E. 2000. Status and trends of wetlands in the conterminous United States 1986 to 1997. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 82pp.

and State, local or regional studies. A random number of sites are also field verified. All photography is cataloged, numbered, tagged, and traced in a database management system.

For each plot, aerial imagery is interpreted and annotated in accordance with procedures published by the Fish and Wildlife Service. The results are compared with previous era imagery, and any changes recorded. The differences between the data sets are analyzed and a statistical estimate of the change is produced.

The five major kinds of wetlands are: 1) freshwater (or palustrine), 2) saltwater (or estuarine), 3) riverine, 4) lacustrine (or lakes and other deepwater habitats), and 5) marine wetlands. For analysis and reporting purposes, these types of wetlands were further divided into subcategories such as freshwater forested wetland, freshwater emergent wetland, estuarine and marine intertidal wetlands.

Methods, Assumptions and Suitability: An interagency group of statisticians developed the design for the national status and trends study published in 2000. The study was based on a scientific probability sample of the surface area of the 48 coterminous States. The area sampled was about 1.93 billion acres and the sampling did not discriminate based on land ownership. The study used a stratified, simple random sampling design. About 754,000 possible sample plots comprised the total population. Geographic information system software was used to organize the information of about 4,375 random sample plots. The plots were examined with the use of remote sensed data in combination with field work. Estimates of change in wetlands were made over a specific time period. A similar study design was used for the Status and Trends report due out in January 2006.

QA/QC Procedures: The Service has developed and implemented quality assurance measures that provide appropriate methods to take field measurements, ensure sample integrity and provide oversight of analyses, which includes reporting of procedural and statistical confidence levels. The objective was to produce comprehensive, statistically valid acreage estimate of the Nation's wetlands. Because of the sample-based approach, various quality control and quality assurance measures were built into the data collection, review, analysis, and reporting stages. This includes field verification of the plots. Six Federal agencies assist with field verification work.

Data Quality Reviews: Not Applicable

Data Limitations: Certain habitats were excluded because of the limitations of aerial imagery as the primary data source to detect wetlands. This was consistent with previous wetland status and trends studies conducted by FWS.

Error Estimate: Estimated procedural error ranged from 4 to 6 percent of the true values when all quality assurance measures have been completed. Procedural error was related to the ability to accurately recognize and classify wetlands both from multiple sources of imagery and on the ground evaluations. Types of procedural errors were missed wetlands, inclusion of upland as wetland, misclassification of wetlands, or misinterpretation of data collection protocols. The

amount of procedural error is usually a function of the quality of the data collection conventions; the number, variability, training and experience of data collection personnel; and the rigor of any quality control or quality assurance measures.

New/Improved Data or Systems: Advances in computerized cartography were used to improve data quality and geospatial integrity. Newer technology allowed the generation of existing digital plot files at any scale to overlay directly over an image base.

References:
http://wetlands.fws.gov/index.html
http://wetlands.fws.gov/bha/SandT/SandTReport.html
http://wetlands.fws.gov/Pubs_Reports/publi.htm

FY 2007 Performance Measure:

- **Annually, beginning in FY04 and in partnership with the Corps of Engineers and states, achieve no net loss of wetlands in the Clean Water Act Section 404 regulatory program**

Performance Database: Since 1989, the goal of the Clean Water Act Section 404 program has been no net loss of wetlands.

Historically, the Corps has collected limited data on wetlands losses and gains in its Regulatory Analysis and Management System (RAMS) permit tracking database. The Corps has compiled national Section 404 wetland permitting data for the last 10 years reflecting acres of wetland impacts avoided (through the permit process), acres permitted for impacts, and acres mitigated. However, limitations in methods used for data collection, reporting and analysis resulted in difficulties in drawing reliable conclusions regarding the effects of the Section 404 program.

Data Source: Data included in RAMS is generally collected by private consultants hired by permit applicants or Corps Regulatory Staff. Data input is generally done by Corps staff.

Methods, Assumptions and Suitability: RAMS was designed to be an administrative aid in tracking permits, thus it lacks many of the fields necessary to adequately track important information regarding wetland losses and gains. Also, the database was modified differently for each of the 38 Corps Districts making national summaries difficult. Furthermore, the database is also proprietary making it difficult to retrofit without utilizing its original developers.

QA/QC Procedures: Historically, there has not been a high level of QA/QC with regard to data input into RAMS. Its antiquated format and numerous administrative fields discourage use. Lack of standard terms and classification also make all aspects of data entry problematic.

Data Quality Reviews: Independent evaluations published in 2001 by the National Academy of Sciences (NAS) and the General Accounting Office (GAO) provided a critical evaluation of the effectiveness of wetlands compensatory mitigation (the restoration, creation, or enhancement of wetlands to compensate for permitted wetland losses) for authorized losses of wetlands and other

waters under Section 404 of the Clean Water Act. The NAS determined that available data was insufficient to determine whether or not the Section 404 program was meeting its goal of no net loss of either wetland area or function. The NAS added that available data suggested that the program was not meeting its no net loss goal. Among its suite of recommendations, the NAS noted that wetland area and function lost and regained over time should be tracked in a national database and that the Corps should expand and improve quality assurance measures for data entry.

In response to the NAS, GAO, and other recent critiques of the effectiveness of wetlands compensatory mitigation, EPA and the Corps in conjunction with the Departments of Agriculture, Commerce, Interior, and Transportation released the National Wetlands Mitigation Action Plan (MAP) on December 26, 2002. The Plan includes 17 tasks that the agencies will complete in FY 07 to improve the ecological performance and results of compensatory mitigation. (Note: some Mitigation Action Plan items may be subsumed by the Corps' mitigation rulemaking expected to be finalized in calendar year 2006.)

Data Limitations: As previously noted, RAMS currently provides the only national data on wetlands losses and gains in the Section 404 Program. Also, as previously noted, there are a number of concerns regarding the conclusions that can be drawn from these numbers. Data quality issues include:

1. Inability to separate restoration, creation, enhancement and preservation acreage from the aggregate "mitigation" acreage reported;
2. Lack of data regarding how much designated mitigation acreage was actually undertaken, and how much of that total was successful;
3. Lack of data regarding how much of the permitted impacts actually occurred; and
4. Limitations on identifying acres "avoided," because the figure is only based on the difference between original proposed impacts and impacts authorized. Often, permit applicants who are aware of the 404 program's requirements to avoid and minimize impacts to wetlands, make initial site selection and site design decisions that minimize wetland impacts prior to submitting a permit application. Such avoidance decisions benefit applicants, as their applications are more likely to be accepted and processed with minor changes. This behavioral influence that the program engenders is difficult to capture and quantify, but contributes considerable undocumented "avoided" impacts.

Error Estimate: Not applicable

New/Improved Data or Systems: The EPA and the Corps have acknowledged the need for improved 404 tracking. The Corps is currently piloting a new national permit tracking database called ORM (Operation and maintenance business information link, Regulatory Module) to replace its existing database (RAMS). As part of the MAP, the Corps is working with EPA and the other Federal agencies and states to ensure that the version of ORM that is ultimately deployed will adequately track wetlands gains and losses. The Corps expects to deploy ORM in all 38 of its districts at the start of 2007, enabling national reporting in early 2008. The Corps, in coordination with EPA and other federal agencies has invested in the development of a GIS-enabled version of the ORM data management system, known as G-ORM and plans to beta test

it in three Corps Districts by Fall 2006. The G-ORM enhancement will improve the environmental results of the CWA Section 404 Program and reporting of aggregate wetland data under it, by spatially-enabling wetland permit decision-making, improving tracking of permitted losses and required compensation, and ensuring public and interagency access to wetland permitting information via a system of web-services and web-mapping tools.

ORM is being designed to provide improved tracking regarding:

- Type of impacts
- Type and quantity of habitat impacted (Using Hydrogeomorphic and Cowardin classification systems)
- Type and quantity of habitat mitigated (Using Hydrogeomorphic and Cowardin classification systems)
- Type and quantity of mitigation (restoration, creation, enhancement, or preservation)
- Differentiating stream mitigation (in linear feet) from wetlands mitigation (in acres)
- Spacial tracking via G-ORM GIS enhancements for both impact and mitigation sites *(planned)*
- Functional losses (debits) at the impact site and functional gains at the mitigation site (credits) if assessment tool is available and applied

References:
http://www.mitigationactionplan.gov/

FY 2007 Performance Measure:

- **Prevent water pollution and protect aquatic ecosystems so that overall ecosystem health of the Great Lakes is improved**

Performance Database: USEPA's Great Lakes National Program Office (GLNPO) will collect and track the eight (8) components of the index and publish the performance results as part of annual reporting under the Government Performance and Results Act (GPRA) and as online reporting of GLNPO's monitoring program, <http://epa.gov/glnpo/glindicators/index.html> . Extensive databases for the indicator components are maintained by GLNPO (phosphorus concentrations, contaminated sediments, benthic health, fish tissue contamination), by binational agreement with Environment Canada (air toxics deposition), and by local authorities who provide data to the USEPA (drinking water quality, beach closures). A binational team of scientists and natural resource managers is working to establish a long term monitoring program to determine extent and quality of coastal wetlands.

Data Source: Data for the index components are tracked internally and reported through the State of the Lakes Ecosystem Conference (SOLEC) process. The document, "State of the Great Lakes 2005 -A Technical Report," presents detailed indicator reports prepared by primary authors, including listings of data sources. Depending on the indicators, data sources may include U.S. and Canadian federal agencies, state and provincial agencies, municipalities, research reports and published scientific literature. Information from the following indicators is used to evaluate the Index components:

Coastal Wetlands group of indicators:
- *Coastal Wetland Invertebrate Community Health*
- *Coastal Wetland Fish Community Health*
- *Coastal Wetland Amphibian Diversity and Abundance*
- *Coastal Wetland Area by Type*
- *Coastal Wetland Plant Community Health*
- *Effects of Water Levels Fluctuations*

Phosphorus Concentrations and Loadings
Concentrations of Contaminants in Sediment Cores
Benthic Health group of indicators:
- *Hexagenia*
- *Abundances of the Benthic Amphipod Diporeia spp.*

Contaminants in Sport Fish
Beach Advisories, Postings and Closures
Drinking Water Quality
Atmospheric Deposition of Toxic Chemicals

Methods, Assumptions, and Suitability: The Index is based on a 40 point scale where the rating uses select Great Lakes State of the Lakes Ecosystem indicators (i.e., coastal wetlands, phosphorus concentrations, Area of Concern (AOC) sediment contamination, benthic health, fish tissue contamination, beach closures, drinking water quality, and air toxics deposition). Each component of the Index is based on a 1 to 5 rating system, where 1 is poor and 5 is good. Authors of SOLEC indicator reports use best professional judgment to assess the overall status of the ecosystem component in relation to established endpoints or ecosystem objectives, when available. Each indicator is evaluated for Status (good, fair, poor, mixed) and Trend (improving, unchanging, deteriorating, undetermined). To calculate the Index, the data for each indicator are compared to the evaluation criteria for the numeric, 1 to 5, rating system. Each of the index components is included in the broader suite of Great Lakes indicators, which was developed through an extensive multi-agency process to satisfy the overall criteria of necessary, sufficient and feasible. Information on the selection process is in the document, "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4."

QA/QC Procedures: GLNPO has an approved Quality Management System in place[1](see reference #1 below) that conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management.

The SOLEC process relies on secondary use of data, i.e., data for many of the indicators are collected, maintained and analyzed by agencies and organizations other than USEPA. Participating agencies and organizations follow their own QA/QC procedures to assure high quality data. A Quality Assurance Project Plan (QAPP) was developed to document procedures for data assessment and review for the indicators reports prepared for the State of the Great Lakes 2005 report. See "State of the Lakes Ecosystem Conference 2004 QAPP."

Data Quality Review: GLNPO's Quality Management System has been given "outstanding" evaluations in previous peer and management reviews[2] (see reference #2 below). GLNPO has

implemented all recommendations from these external audits and complies with Agency Quality standards.

An external Peer Review of SOLEC processes and products was conducted in 2003 by an international panel of experts familiar with large-scale regional or national indicator and reporting systems. Panel findings were generally positive and several recommendations were made to consider for future SOLEC events and reports. Many of the recommendations have been implemented, and others are being considered for feasibility. The final report by the review panel is available online at http://epa.gov/glnpo/solec/index.html. See "State of the Lakes Ecosystem Conference Peer Review Report" in the SOLEC 2004 section.

A second review of the suite of Great Lakes indicators was conducted by Great Lakes stakeholders in 2004. As a direct result of the findings and recommendations from the participants, several indicators were revised, combined or dropped, and a few others were added. The indicators were also regrouped to allow the user to more easily identify the indicators relevant to particular ecosystem components or environmental issues. The final report from the review is available online at http://epa.gov/glnpo/solec/index.html. See "State of the Lakes Ecosystem Conference Peer Review Report, Part 2: Stakeholder Review of the Great Lakes Indicators" in the SOLEC 2004 section.

Data Limitations: Data limitations vary among the indicator components of the Index. The data are especially good for phosphorus concentrations, fish tissue contamination, benthic health, and air toxics deposition. The data associated with other components of the index (coastal wetlands, AOC sediment contamination, beach closures, and drinking water quality) are more qualitative. Some data are distributed among several sources, and without an extensive trend line. Limitations for each of the index components are included in the formal indicator descriptions in the document, "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4."

Error Estimate: Error statistics for the Great Lakes Index have not been quantified. Each unit of the 40 point scale represents 2.5% of the total, so any unit change in the assessment of one of the component indicators would result in a change of the index of that magnitude. The degree of environmental change required to affect an indicator assessment, however, may be significantly large.

New/Improved Data or Systems: The data system specifically for this index is being developed. Data continue to be collected through the SOLEC process by various agencies, including GLNPO. Efforts are currently in progress to integrate various Great Lakes monitoring programs to better meet SOLEC objectives and to increase efficiencies in data collection and reporting.

References:

1. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.

2. "*GLNPO Management Systems Review of 1999.*" Unpublished - in USEPA Great Lakes National Program Office files.

3. "State of the Lakes Ecosystem Conference 2004 QAPP." Unpublished. Prepared as part of Cooperative Agreement between USEPA and Environment Canada.

4. Canada and the United States. "State of the Great Lakes 2003." ISBN 0-662-34798-6, Environment Canada, Burlington, Ontario, Cat. No. En40-11/35-2003E, and U.S.

5. Environmental Protection Agency, Chicago, EPA 905-R-03-004. 2003. Available on CD and online at <www.binational.net>.

6. Canada and the United States. "Implementing Indicators 2003 - A Technical Report." ISBN 0-662-34797-8 (CD-Rom), Environment Canada, Burlington, Ontario, Cat. No. En164-1/2003E-MRC (CD-Rom), and U.S. Environmental Protection Agency, Chicago, EPA 905-R-03-003. 2003. Available on CD from U.S. EPA/Great Lakes National Program Office, Chicago. Available online at http://epa.gov/glnpo/solec/index.html

7. Canada and the United States. "State of the Great Lakes 2005 - Draft." Environment Canada, Burlington, Ontario, and U.S. Environmental Protection Agency, Chicago, 2004. Available online at <http://epa.gov/glnpo/solec/index.html>

8. Bertram, Paul and Nancy Stadler-Salt. "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4." Environment Canada, Burlington, Ontario, and U.S. EPA, Chicago. 2000. Available online at <www.binational.net>.

All SOLEC documents, background reports, indicator reports, indicator development processes, conference agenda, proceedings and presentations are available online at http://epa.gov/glnpo/solec/index.html The documents are sorted by SOLEC year and include the State of the Great Lakes reports which are released the following calendar year.

FY 2007 Performance Measure:

- **The average concentrations of PCBs in whole lake trout and walleye**

Performance Database: Great Lakes National Program Office (GLNPO) Great Lakes Fish Monitoring Program (GLFMP) [1](see reference #1 below). This program is broken into two separate elements, Element 1 – Open Water Trend Monitoring and Element 2 – Game Fish Fillet Monitoring. Each program collects and monitors contaminants in Great Lakes fish at alternating locations throughout the Great Lakes Basin; fish are collected at one set of sites during even years and at another set in odd years. Element 1 began with the collection of data in Lake Michigan in 1972 and the additional lakes were added in 1976. Element 2 began with the collection of data in all five of the Great Lakes in the early 1980's. In FY07, the database will contain QA/QC data from fish collected in 2005. Data are reported on a calendar year basis and

are specific to the even or odd year sampling schedule (even year sites are only compared to other even year sites etc.)

Data Source: GLNPO is the principal source of data for the Great Lakes Fish monitoring program. The Great Lakes States and Tribes assist with fish collection. Previous cooperating organizations include the U.S. Geological Survey (USGS), the U.S. Fish and Wildlife Service (USFWS), and the Food and Drug Administration (FDA).

Methods, Assumptions, and Suitability: This indicator provides concentrations of selected organic contaminants in Great Lakes open water fish. The Great Lakes Fish Monitoring Program is broken into two separate elements that monitor potential exposure to contaminant concentrations for wildlife (Element 1) and humans through consumption (Element 2). Only Element 1 is included in this indicator.

The first element, Open Lakes Trend Monitoring Program, was created to: (1) determine time trends in contaminant concentrations, (2) assess impacts of contaminants on the fishery using fish as biomonitors, and (3) assess potential risk to the wildlife that consume contaminated fish. The first element includes data from ten 600-700 mm lake trout (*Salvelinus namaycush*) whole fish composites (5 fish in each composite) from each of the lakes. Since sufficient lake trout are not found in Lake Erie, data for 450 – 550 mm walleye (*Stizostedion vitreum vitreum*) are used for that Lake.

All GLFMP data are quality-controlled and then loaded into the Great Lakes Environmental Database (GLENDA). Included in GLENDA are flags for each data point that can be used to evaluate the usability of the data. Each Great Lake is a unique environment with a distinct growth rate, food web, and chemical integrity. For this reason, a direct comparison of annual concentrations between basins is not appropriate. However, an average annual basin-wide percent decrease can be determined using an exponential decrease function, and the 1990 data as the baseline. The percent decrease of Element 1 can be calculated and compared to the 5% reduction target to determine if the target has been met. All years of data from all lakes are plotted on the same graph, with each year containing 5 data points. An exponential decrease is then found for the entire data set and the percent decrease is calculated from the best fit line. The Lake Michigan data set represents the worst case scenario in the Great Lakes Basin for the Open Lakes Trend Monitoring Program.

QA/QC Procedures: GLNPO has an approved Quality Management System in place[2] (see reference #2 below) that conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management. The Quality Assurance (QA) plan that supports the analytical portion of the fish contaminant program is approved and available online[3] (see reference #3 below). The draft field sampling Quality Assurance Project Plan (QAPP) is being revised and will be submitted to the GLNPO QA Officer for review upon the completion of the Quality Management Plan.

Data Quality Review: GLNPO's Quality Management System has been evaluated as "outstanding" in previous peer and management reviews[4] (see reference #4 below). GLNPO has

implemented all recommendations from these external audits and complies with Agency Quality standards.

Data Limitations: Great Lakes Fish Monitoring Program data are not well-suited to portray localized changes. Nevertheless, data collected at a certain site (odd year or even year sites) can be compared to data collected from the same site. In addition, only very general comparisons can be made of contaminant concentrations between lakes. A recent review of the odd year Open Lake Trend Monitoring in Lake Erie data indicate an increased variability in the data between the years of 1999 and 2003 because during those years several individual samples (fish) fell outside of the desired size range leading to a higher or lower than average mean sample size for the composite.

Error Estimate: The data quality objective of the fish contaminant program was to detect a 20% change in each measured contaminant concentration between two consecutively sampled periods at each site. Based on changing environmental conditions, the data quality objective has been revised to detect trends in concentration of 0.1 mg/kg/year based on three consecutive sampling periods (6 years, as sites are sampled every other year) for a specific site, with a power of 80% or greater. The program was designed to reach that goal with 95% confidence.

New/Improved Data or Systems: The GLENDA database is a significant new system with enhanced capabilities. Existing and future fish data will be added to GLENDA.

References:

1. "*The Great Lakes Fish Monitoring Program - A technical and Scientific Model For Interstate Environmental Monitoring.*" September, 1990. EPA503/4-90-004.

2. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003. http://www.epa.gov/glnpo/qmp/

3. "*Great Lakes Fish Monitoring Program – Quality Assurance Project Plan for Sample Collection Activities"*, Great Lakes National Program Office. http://www.epa.gov/glnpo/glindicators/fishtoxics/GLFMP_QAPP_082504.pdf

4. "*GLNPO Management Systems Review of 1999."* Unpublished - in USEPA Great Lakes National Program Office files.

*5. "Trends in Great Lakes Fish Contaminants", Dr. Deborah Swackhammer, University of Minnesota Environmental Occupational Health, School of Public Health, EPA Grant #GL97524201-2, 7/1/02.*De Vault, D. S. 1984. Contaminant analysis of fish from Great Lakes harbors and tributary mouths. U.S. Environmental Protection Agency, Great Lakes National Program Office. USEPA 905/3-84-003, http://www.epa.gov/glnpo/glindicators/fishtoxics/GLFMP%20QAPP%20v7.pdf

6. De Vault, D. S., R. Hesselberg, P. W. Rodgers and T. J. Feist. 1996. Contaminant trends in lake trout and walleye from the Laurentian Great Lakes. Journal of Great Lakes Research 22: 884-895.

7. De Vault, D. S., W. A. Willford, R. Hesselberg, E. Nortrupt and E. Rundberg. 1985. Contaminant trends in lake trout (Salvelinus namaycush) from the upper Great Lakes. Archives of Environmental Contamination and Toxicology 15: 349-356.

8. De Vault, D. S., W. A. Willford, R. J. Hesselberg and D. A. Nortrupt. 1986. Contaminant trends in lake trout (Salvelinus namaycush) from the upper Great Lakes. Archives of Environmental Contamination and Toxicology 15: 349-356.

9. GLNPO. 1981. A Strategy for Fish Contaminant Monitoring in the Great Lakes. USEPA Great Lakes National Program Office. .

10. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.

11. Swackhammer, D. L. 2001. "*Trends in Great Lakes Fish Contaminants."* Unpublished - in USEPA Great Lakes National Program Office files.

12. Swackhammer, D.L. February 2002. "*Trends in Great Lakes Fish Contaminants."* Unpublished - in USEPA Great Lakes National Program Office files.

13. "*GLNPO Management Systems Review of 1999."* Unpublished - in USEPA Great Lakes National Program Office files.

FY 2007 Performance Measure:

- **Concentration trends of toxic chemicals in the air in the Great Lakes basin will decline**

Performance Database: Great Lakes National Program Office (GLNPO) integrated atmospheric deposition network [1] (see reference #1 below) (IADN) operated jointly with Environment Canada. Reporting starts with 1992 data and includes concentrations of polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and organochlorine pesticides in air and precipitation; however, this Performance Measure addresses only PCBs. Monitoring results from 2005 will be reported in 2007. Data are reported on a calendar year basis.

Data Source: GLNPO and Environment Canada are the principal sources of the data. Data also come through in-kind support and information sharing with other Federal agencies and Canada.

Methods, Assumptions, and Suitability: There are five master IADN stations, one for each lake, which are supplemented by satellite stations in other locations. The master stations are

located in remote areas and are meant to represent regional background levels. Concentrations from the master stations are used for the performance measure. Concentrations from the satellite stations in Chicago and Cleveland are also sometimes used to demonstrate the importance of urban areas to atmospheric deposition to the Lakes.

Air samples are collected for 24 hours using high-volume samplers containing an adsorbent. Precipitation samples are collected as 28-day composites. Laboratory analysis protocols generally call for solvent extraction of the organic sampling media with addition of surrogate recovery standards. Extracts are then concentrated followed by column chromatographic cleanup, fractionation, nitrogen blow-down to small volume (about 1 mL) and injection (typically 1 uL) into gas chromatography instruments.

All IADN data are loaded and quality controlled using the Research Database Management System (RDMQ), a Statistical Analysis System (SAS) program. RDMQ provides a unified set of quality assured data, including flags for each data point that can be used to evaluate the usability of the data. Statistical summaries of annual concentrations are generated by the program and used as input into an atmospheric loading calculation. The loadings calculation is described in detail in the Technical Summary referenced below. However, calculating loadings requires additional data and constants that introduce further error. Therefore, the averaged annual concentrations rather than the loadings are used in the performance measure. Concentrations can vary from year to year due to differences in weather (temperature, wind patterns, etc.), so comparing concentrations from one year to the next is not always appropriate. This performance measure examines the average percent decline for the **long-term trend** determined using an exponential decrease function. Each year the average percent decline is calculated after adding new data. A baseline percent decrease was determined using data through 2000, and the aim is that this rate of decrease will continue.

QA/QC Procedures: GLNPO has a Quality Management System in place, which conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management[2] (see reference #2 below). Quality Assurance Project Plans are in place for the laboratory grantee, as well as for the network as a whole. A jointly-funded QA contractor conducts laboratory and field audits, tracks QA statistics, and carries out special QA studies. Data from all contributing agencies are quality-controlled using the SAS-based system.

Data Quality Review: GLNPO's Quality Management System has been evaluated as "outstanding" in previous peer and management reviews[3] (see reference #3 below). GLNPO has implemented all recommendations from these external audits and complies with Agency Quality Standards[4] (see reference #4 below). The IADN program has a joint Canadian-US quality system and binational Steering Committee that meets periodically in person or via conference calls to make decisions on network operation and data management and quality.

A regular set of laboratory and field blanks is taken and recorded for comparison to the IADN field samples. In addition, a suite of chemical surrogates and internal standards is used extensively in the analyses. A jointly-funded QA contractor conducts laboratory and field audits, tracks QA statistics, and carries out special QA studies. As previously mentioned, data from all contributing agencies are quality-controlled using a SAS-based system.

Data Limitations: The sampling design is dominated by rural sites that under-emphasize urban contributions to deposition; thus, although the data are very useful for trends information, there is less assurance of the representativeness of deposition to the whole lake. U.S. and Canadian laboratories use somewhat different sampling and analytical methods; QA studies have found that differences in resulting data are attributable mostly to the sampling differences. There are gaps in open lake water column organics data, thus limiting our ability to calculate atmospheric loadings. This gap is being addressed through the recent implementation by GLNPO of the Great Lakes Aquatic Contaminant Surveillance (GLACS) program, which will collect water contaminant data in the Lakes.

In the past, there has been a lag in the data from the Canadian sites (Burnt Island on Lake Huron and Point Petre on Lake Ontario). U.S. data is usually reported two years after it is collected (i.e., 2002 data was reported in 2004); the Canadian data may not be available on this schedule.

Error estimate: The performance measure examines the long-term trend in concentrations. Concentrations have an error of +/- 40%, usually less. Differences between laboratories have been found to be 40% or less. This is outstanding given the very low levels of these pollutants in the air and the difficulty in analysis. Improvements in quality assurance (use of a clean lab for Canadian precipitation analysis, making calibration standards consistent among agencies, etc.) are helping to further close this gap.

New/Improved Data or Systems: GLNPO expects to post joint data that has passed quality review to < http://binational.net/ >, a joint international Web Site, and to the IADN Web Site at < www.msc.ec.gc.ca/iadn/ >. Copies of IADN data are now held in U.S. and Canadian databases. Efforts are being made to be able to streamline data requests through the National Atmospheric Chemistry Database (NAtChem), which includes atmospheric data from many North American networks. Environment Canada management is working to reduce the data lag from the Canadian IADN stations.

References:

1. *"Great Lakes National Program Office Indicators. Air Indicators."* http://www.epa.gov/glnpo/glindicators/air.html

Details of these analyses can be found in the Laboratory Protocol Manuals or the agency project plans, which can be found on the IADN resource page at http://www.epa.gov/glnpo/monitoring/air/iadn/iadn.html

Overall results of the project can be found in "*Technical Summary of Progress under the Integrated Atmospheric Deposition Program 1990-1996"* and the *"Technical Summary of Progress under the Integrated Atmospheric Deposition Network 1997-2002"*. Both (as well as the Atmospheric Loadings reports) can be found on the IADN resource page.

2. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.

3. *"GLNPO Management Systems Review of 1999."* Unpublished - in USEPA Great Lakes National Program Office files.

4. *"Integrated Atmospheric Deposition Network Quality Assurance Program Plan - Revision 1.1.* Environment Canada and USEPA. June 29, 2001. Unpublished - in USEPA Great Lakes National Program Office files.

FY 2007 Performance Measure:

- **Cumulative total of Areas of Concern within the Great Lakes Basin that have been restored and delisted**

Performance Database: USEPA's Great Lakes National Program Office will track the cumulative total Areas of Concern (AOC) and post that information http://www.epa.gov/glnpo/aoc/index.html> Forty-three AOCs have been identified: 26 located entirely within the United States; 12 located wholly within Canada; and five that are shared by both countries. Since 1987, GLNPO has tracked the 31 that are within the US or shared; however, none of these are currently restored and delisted. Information is reported on a calendar year basis, however the system is being designed for semi-annual or more frequent updates.

Data Source: Internal tracking and communications with Great Lakes States, the US Department of State and the International Joint Commission (IJC).

Methods, Assumptions, and Suitability: USEPA's Great Lakes National Program Office is in regular communication with the Great Lakes States, the US Department of State and the IJC, and is responsible for coordinating and overseeing the de-listing of AOCs. Generally speaking, under the Great Lakes Water Quality Agreement, an AOC is an area in the Great Lakes determined to have significant beneficial use impairments, such as restrictions on fish and wildlife consumption, fish tumors, eutrophication, beach closings, added costs to agriculture or industry. In 1989, the IJC established a review process and developed AOC listing/delisting criteria (http://www.ijc.org/rel/boards/annex2/buis.htm#table1) for existing and future AOCs. In 2001, the U.S. Policy Committee, led by GLNPO and including State, Tribal, and Federal agencies responsible for Great Lakes environmental issues, developed delisting guidelines for domestic AOCs (http://www.epa.gov/glnpo/aoc/delist.html) and for the binational AOCs shared by Michigan and Ontario http://www.epa.gov/glnpo/aoc/delist.html - appendix 5).

QA/QC Procedures: GLNPO has an approved Quality Management System in place[1] (see reference #1 below) that conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management.

Data Quality Review: GLNPO's Quality Management System has been given "outstanding" evaluations in previous peer and management reviews[2] (see reference #2) below. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

Data Limitations: None known.

Error Estimate: None.

New/Improved Data or Systems: NA

References:
GLNPO will develop and maintain the appropriate tracking system once there are any de-listed U.S. or binational Areas of Concern. Information regarding Areas of Concern is currently available online at: http://www.epa.gov/glnpo/aoc/index.html

1. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.

2. "*GLNPO Management Systems Review of 1999."* Unpublished - in USEPA Great Lakes National Program Office files.

FY 2007 Performance Measure:

- **Cubic yards of contaminated sediment in the Great Lakes remediated (cumulative from 1997)**

Performance Database: Data tracking sediment remediation are compiled in two different formats. The first is a matrix that shows the annual and cumulative totals of contaminated sediment that was remediated in the Great Lakes basin in the reporting year and from 1997 for each Area of Concern or other non-Areas of Concern with sediment remediation. The second format depicts the yearly totals on a calendar year basis graphically. These databases are reported approximately one year after the completion of work.

Data Source: GLNPO collects sediment remediation data from various State and Federal project managers across the Great Lakes region that conduct and coordinate contaminated sediments work. These data are obtained directly from the project manager via an information fact sheet the project manager completes for any site in the Great Lakes basin that has performed any remedial work on contaminated sediment. The project manager also indicates whether an approved Quality Assurance Project Plan (QAPP) was used in the collection of data at the site. GLNPO does not accept unsolicited data without adequate assurance that a QAPP was in place and the reporters of the data are not likely to be biased.

Methods, Assumptions, and Suitability: The data collected to track sediment remediation in the Great Lakes show the amount of sediment remediated (dredged, capped, other) for that year, the amount of sediment remediated in prior years, and the amount of sediment remaining to be addressed for a particular site. This format is suitable for year-to-year comparisons for individual sites.

QA/QC Procedures: GLNPO relies on the individual government/agency project managers to provide information on whether an approved QAPP was in place during remediation of contaminated sediment. This information is used to decide if the data provided by the project manager are reliable for GLNPO reporting purposes. If an approved QAPP was not used, sediment data would not likely be reported by GLNPO, unless GLNPO finds that alternative information is available that provides sufficient quality documentation for the project and associated data. This approach allows GLNPO to use best professional judgment and flexibility in reporting data from any cases where there was not a QAPP, but (a) the remedial action is noteworthy and (b) the project was conducted by recognized entities using widely accepted best practices and operating procedures.

The tracking database houses information on the calculated amount of sediment remediated at individual sites as provided by the project managers. The individual site project managers are responsible for completing the data request forms, reviewing draft figures to verify that the GLNPO project manager transferred the data correctly, and providing any updated or improved estimates. It is GLNPO's responsibility to determine if the data are usable based upon the information sheet provided by the project managers. GLNPO does not attempt to verify mass and volume estimates due to the variability in how to calculate them. GLNPO ensures that the estimates provided make sense for the site, and that all estimates are reported in the same units. GLNPO management and Sediment Team members review the data, in the graphic and matrix formats, prior to reporting. GLNPO's Sediment Team works closely with partners and has confidence in those who provide data for the summary statistics. This familiarity with partners and general knowledge of ongoing projects allows GLNPO management to detect mistakes or questionable data.

Data Quality Review: The data, in both the graphic and matrix formats, are reviewed by individual project managers, GLNPO's Sediment Team, and management prior to being released. Data quality review procedures are outlined in the QAPP referenced below. GLNPO's Quality Management System has been given "outstanding" evaluations in previous peer and management reviews. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality Standards.

Data Limitations: The data provided in the sediment tracking database should be used as a tool to track sediment remediation progress at sites across the Great Lakes. Many of the totals for sediment remediation are estimates provided by project managers. For specific data uses, individual project managers should be contacted to provide additional information.

Error Estimate: The amount of sediment remediated or yet to be addressed should be viewed as estimated data. A specific error estimate is not available.

New/Improved Data or Systems: Existing tracking systems are anticipated to remain in place.

References:

1. Giancarlo Ross, M.B. Quality Assurance Project Plan for " Great Lakes Sediment Remediation Project Summary Support." Unpublished – in USEPA Great Lakes National

Program Office files.

2. Giancarlo Ross, M.B. "*Sediment Remediation Matrix"*. Unpublished - in USEPA Great Lakes National Program Office files.

3. Giancarlo Ross, M.B. *"Sediment Remediation Pie Charts"*. Unpublished - in USEPA Great Lakes National Program Office files.

4. Giancarlo Ross, M.B. "Compilation of Project Managers Informational Sheets". Unpublished - in USEPA Great Lakes National Program Office files.

FY 2007 Performance Measure:

- **Acres of submerged aquatic vegetation (SAV) present in the Chesapeake Bay**

Performance Database: SAV acres in Chesapeake Bay. Total acres surveyed and estimated additional acres from 1978 through 2004, excluding the years 1979-1983 and 1988 when no surveys were conducted. The FY 2007 Annual Performance Report for this measure will be based on the results of the survey conducted the previous calendar year (2006). We expect to receive the preliminary survey results for calendar year 2006 in March 2007.

Data Source: Virginia Institute of Marine Sciences provides the data (via an EPA Chesapeake Bay Program (CBP) grant to Virginia Institute of Marine Sciences). EPA has confidence in the third party data and believes the data are accurate and reliable based on QA/QC procedures described below.

Methods, Assumptions and Suitability: The SAV survey is a general monitoring program, conducted to optimize precision and accuracy in characterizing annually the status and trends of SAV in tidal portions of the Chesapeake Bay. The general plan is to follow fixed flight routes over shallow water areas of the Bay, to comprehensively survey all tidal shallow water areas of the Bay and its tidal tributaries. Non-tidal areas are omitted from the survey. SAV beds less than 1 square meter are not included due to the limits of the photography and interpretation. Annual monitoring began in 1978 and is ongoing. Methods are described in the Quality Assurance Project Plan (QAPP) on file for the EPA grant and at the VIMS web site (http://www.vims.edu/bio/sav/).

QA/QC Procedures: Quality assurance project plan for the EPA grant to the Virginia Institute of Marine Sciences describes data collection, analysis, and management methods. This is on file at the EPA Chesapeake Bay Program Office. The VIMS web site at http://www.vims.edu/bio/sav/ provides this information as well. Metadata are included with the data set posted at the VIMS web site (http://www.vims.edu/bio/sav/metadata/recent.html).

Data Quality Reviews: This indicator has undergone extensive technical and peer review by state, Federal and non-government organization partner members of the SAV workgroup and the Living Resources subcommittee. Data collection, data analysis and QA/QC are conducted by the principal investigators/scientists. The data are peer reviewed by scientists on the workgroup.

Data selection and interpretation, the presentation of the indicator, along with all supporting information and conclusions, are arrived at via consensus by the scientists and resource manager members of the workgroup. The workgroup presents the indicator to the subcommittee where extensive peer review by Bay Program managers occurs.

There have been no data deficiencies identified in external reviews

Data Limitations: Due to funding constraints, there were no surveys in the years 1979-1983 and 1988. Spatial gaps in 1999 occurred due to hurricane disturbance and subsequent inability to reliably photograph SAV. Spatial gaps in 2001 occurred due to post-nine-eleven flight restrictions near Washington D.C. Spatial gaps in 2003 occurred due to adverse weather in the spring and summer and Hurricane Isabel in the fall.

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: Some technical improvements (e.g., photointerpretation tools) were made over the 22 years of the annual SAV survey in Chesapeake Bay.

References:
See Chesapeake Bay SAV special reports at http://www.vims.edu/bio/sav/savreports.html and bibliography at http://www.vims.edu/bio/sav/savchespub.html. The SAV distribution data files are located at http://www.vims.edu/bio/sav/savdata.html and also at http://www.chesapeakebay.net/pubs/statustrends/88-data-2002.xls. The SAV indicator is published at http://www.chesapeakebay.net/status.cfm?sid=88.

FY 2007 Performance Measures:

- **Reduce nitrogen loads entering Chesapeake Bay, from 1985 levels (2002 Baseline: 51 million pounds/year reduced)**
- **Reduce phosphorus loads entering Chesapeake Bay, from 1985 levels (2002 Baseline: 8 million pounds/year reduced)**
- **Reduce sediment loads entering Chesapeake Bay, from 1985 levels (2002 Baseline: 0.8 million tons/year reduced)**

Performance Database: Nutrient and Sediment Loads Delivered to the Chesapeake Bay. The Bay data files used in the indicator are located at http://www.chesapeakebay.net/pubs/statustrends/186-data-2003.xls. Data have been collected in 1985, 2000, 2001, 2002, 2003 and are expected on an annual basis after 2003. There is a two year data lag. Load data are from Chesapeake Bay watershed portions of NY, MD, PA, VA, WV, DE, and DC.

The FY 2007 Annual Performance Report for these measures will be based on the results of the 2005 data collection. We expect to receive the preliminary results for 2005 in January 2007.

Data Source: State/district data are provided to the Chesapeake Bay Program Office for input into the Chesapeake Bay Program Watershed Model.

Methods, Assumptions and Suitability: The data are of high quality. Data are consolidated by watershed boundaries at the state level and provided to the Chesapeake Bay Program Office for input into the watershed model.

What is the Watershed Model?

A lumped parameter Fortran based model (HSPF) that mimics the effects of hydrology, nutrient inputs, and air deposition on land and outputs runoff, groundwater, nutrients and sediment to receiving waters. Ten years of simulation are used and averaged to develop the reduction effects of a given set of Best Management Practices (BMPs). Using a ten-year average of actual weather (hydrologic, temperature, wind, etc.) ensures wet, dry and average conditions for each season are included. The effectiveness of the model is dependent upon the quality of the assumptions, BMPs and landuse descriptions used. The model is calibrated extensively to real-time monitoring, outside peer review and continual updates as better information, data collection and computer processing power become available.

What are the input data?

The model takes meteorological inputs such as precipitation, temperature, evapotranspiration, wind speed, solar radiation, dewpoint, and cloud cover to drive the hydrologic simulation. The changes in nutrient outputs are primarily determined by such factors as land use acreage, BMPs, fertilizer, manure, atmospheric deposition, point sources, and septic loads.

BMPs: Watershed Model BMPs include all nutrient reduction activities tracked by the jurisdictions for which a source has been identified, cataloged and assigned an efficiency. Efficiencies are based on literature review, recommendations of the appropriate source workgroup and approved by the Nutrient Subcommittee. It is the responsibility of the jurisdictions to track and report all nutrient reduction activities within their borders and maintain documentation to support submissions.

Land use acreage is determined by combining analyses of satellite imagery and county-based databases for agricultural activities and human population. Fertilizer is determined by estimated application rates by crops and modified by the application of nutrient management BMPs. Manure applications are determined by an analysis of animal data from the census of agriculture.

Atmospheric deposition is determined by an analysis of National Atmospheric Deposition Program (NADP) deposition data and modified by scenarios of the Regional Acid Deposition Model. Point Source loads are determined from Discharge Monitoring Reports. Septic loads are estimated in a study commissioned by the CBP.

http://www.chesapeakebay.net/pubs/1127.pdf
http://www.chesapeakebay.net/pubs/114.pdf
http://www.chesapeakebay.net/pubs/112.pdf
http://www.chesapeakebay.net/pubs/777.pdf

What are the model outputs?

The watershed model puts out daily flows and nitrogen, phosphorus, and sediment loads for input to the water quality model of the Chesapeake Bay. The daily loads are averaged over a 10-year hydrologic period (1985-1994) to report an average annual load to the Bay. The effect of flow is removed from the load calculations.

What are the model assumptions?

BMPs: Model assumptions are based on three conditions: knowledge, data availability and computing power. The ability to alter what is used in the watershed model is a function of the impact the change would have on calibration. In many cases there is new information, data or methodologies that would improve the model, but changes are not possible because of the impact on the current calibration.

Changes in manure handling, feed additives, new BMPs and some assumptions could be incorporated into the model without impacting the calibration. In these cases, the changes were made.

Other input assumptions, such as multiple manure application levels, increasing the number and redefining some land uses, defining new nutrient or sediment sources, adjusting for varying levels of management (range of implementation levels) are items scheduled for incorporation in the new model update (2005).

Input assumptions are documented in the above publications. Assumptions of the actual model code are in the HSPF documentation:
ftp://water.usgs.gov/pub/software/surface_water/hspf/doc/hspfhelp.zip

Data are collected from states and local governments programs. Methods are described at http://www.chesapeakebay.net/data/index.htm, (refer to CBP Watershed Model Scenario Output Database, Phase 4.3). For more information contact Kate Hopkins at hopkins.kate@epa.gov or Jeff Sweeney jsweeney@chesapeakebay.net

QA/QC Procedures: State offices have documentation of the design, construction and maintenance of the databases used for the performance measures, showing they conform to existing U.S. Department of Agriculture Natural Resources Conservation Service (USDA/NRCS) technical standards and specifications for nonpoint source data and EPA's Permit Compliance System (PCS) standards for point source data. State offices also have documentation of implemented Best Management Practices (BMPs) based on USDA NRCS standards and specification and the Chesapeake Bay Program's protocols and guidance. BMPs are traditionally used to reduce pollutant loads coming from nonpoint sources such as urban/suburban runoff, agriculture, and forestry activities.

References include: the USDA NRCS Technical Guide and Appendix H from the Chesapeake Bay Program (contact Russ Mader at mader.russ@epa.gov or Kate Hopkins at hopkins.kate@epa.gov). Quality assurance program plans are available in each state office.

Data Quality Reviews: All data are reviewed and approved by the individual jurisdictions before input to the watershed model. QA/QC is also performed on the input data to ensure basic criteria, such as not applying a BMP at a higher level than allowed. A specific level of input should yield output within a specified range of values. Output is reviewed by both the CBPO staff and the Tributary Strategy Workgroup as an additional level of QA/QC. Any values out of the expected range is analyzed and understood before approval and public release. The model itself is given a quarterly peer review by an outside independent group of experts. There have been no data deficiencies identified in external reviews.

Data Limitations: Data collected from voluntary collection programs are not included in the database, even though they may be valid and reliable. The only data submitted by state and local governments to the Chesapeake Bay Program Office are data that are required for reporting under the cost share and regulatory programs. State and local governments are aware that additional data collection efforts are being conducted by non-governmental organizations, however, they are done independently of the cost share programs and are not reported.

Error Estimate: There may be errors of omission, misclassification, incorrect georeferencing, misdocumentation or mistakes in the processing of data.

New/Improved Data or Systems: The next version of the watershed model is currently under development and will be completed in 2006. The new version (phase 5) will have increased spatial resolution and ability to model the effects of management practices. The phase 5 watershed model is a joint project with cooperating state and Federal agencies. Contact Gary Shenk gshenk@chesapeakebay.net or see the web site at http://www.chesapeakebay.net/phase5.htm

References:

See http://www.chesapeakebay.net/data/index.htm, refer to CBP Watershed Model Scenario Output Database, Phase 4.3. Contact Kate Hopkins at hopkins.kate@epa.gov or Jeff Sweeney jsweeney@chesapeakebay.net

The nutrient and sediment loads delivered to the Bay indicator are published at http://www.chesapeakebay.net/status.cfm?sid=186. The nutrient and sediment loads delivered to the Bay data files used in the indicator are located at http://www.chesapeakebay.net/pubs/statustrends/186-data-2003.xls. See "Chesapeake Bay Watershed Model Application and Calculation of Nutrient and Sediment Loadings, Appendix H: Tracking Best Management Practice Nutrient Reductions in the Chesapeake Bay Program, A Report of the Chesapeake Bay Program Modeling Subcommittee", USEPA Chesapeake Bay Program Office, Annapolis, MD, August 1998, available at http://www.chesapeakebay.net/pubs/777.pdf

See USDA NRCS Field Office Technical Guide available at http://www.nrcs.usda.gov/technical/efotg/

FY 2007 Performance Measures:

- **Prevent water pollution and protect aquatic ecosystems so that overall aquatic system health of coastal waters of the Gulf of Mexico is improved on the "good/fair/poor" scale of the National Coastal Condition Report**

- **Reduce releases of nutrients throughout the Mississippi River Basin to reduce the size of the hypoxic zone in the Gulf of Mexico**

Performance Database: (1) Louisiana Coastal Hypoxia Shelfwide Survey metadata (data housed at National Oceanic and Atmospheric Administration/National Ocean Data Center, Silver Spring, Maryland). Funds for this research are provided by the National Oceanic and Atmospheric Administration, Coastal Ocean Program (NOAA/COP)

(2) Southeast Area Monitoring and Assessment Program (**SEAMAP)** - Gulf surveys.

The data used in assessing performance under this measure have been collected annually on a calendar year basis since 1982.

Data Source: (1) Hydrographic data are collected during annual surveys of the Louisiana continental shelf. Nutrient, pigment and station information data are also acquired. The physical, biological and chemical data collected are part of a long-term coastal Louisiana dataset. The goal is to understand physical and biological processes that contribute to the causes of hypoxia and use the data to support environmental models for use by resource managers.

(2) The Southeast Area Monitoring and Assessment Program (SEAMAP) is a state/Federal/university program for collection, management and dissemination of fishery-independent data and information in the southeastern United States.

Methods, Assumptions and Suitability: The distribution of hypoxia on the Louisiana shelf has been mapped annually in mid-summer (usually late July to early August) over a standard 60- to 80- station grid since 1985. During the shelfwide cruise, data are collected along transects from the mouth of the Mississippi River to the Texas border. Information is collected on a wide range of parameters, including conductivity/temperature/depth (CTD), light penetration, dissolved oxygen, suspended solids, nutrients, phytoplankton, and chlorophyll. Hydrographic, chemical, and biological data also are collected from two transects of Terrebonne Bay on a monthly basis, and bimonthly, off Atchafalaya Bay. There is a single moored instrument array in 20-m water depth in the core of the hypoxic zone that collects vertical conductivity/temperature data, as well as near-surface, mid, and near-bottom oxygen data; an upward directed Acoustic Doppler Current Profiler (ADCP) on the seabed measures direction and speed of currents from the seabed to the surface. There is also an assortment of nutrient and light meters.

Station depths on the cruises range from 3.25 to 52.4 meters. Northern end stations of transects are chosen based on the survey vessel's minimum depth limits for each longitude.

Standard data collections include hydrographic profiles for temperature, salinity, dissolved oxygen, and optical properties. Water samples for chlorophyll *a* and phaeopigments, nutrients,

salinity, suspended sediment, and phytoplankton community composition are collected from the surface, near-bottom, and variable middle depths.
The objective is to delimit and describe the area of midsummer bottom dissolved oxygen less than 2 (mg. L).

Details of data collection and methodology are provided in referenced reports.

QA/QC Procedures: NOAA does not require written QA/QC procedures or a Quality Management Plan; however, the procedures related to data collection are covered in metadata files.

The SEAMAP Data Management System (DMS) conforms to the SEAMAP Gulf and South Atlantic DMS Requirements Document developed through a cooperative effort between National Marine Fisheries Service (NMFS) and other SEAMAP participants.

Data Quality Reviews: (1) Essential components of the environmental monitoring program in the Gulf of Mexico include efforts to document the temporal and spatial extent of shelf hypoxia, and to collect basic hydrographic, chemical and biological data related to the development of hypoxia over seasonal cycles. All data collection protocols and data are presented to and reviewed by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (the Task Force) in support of the adaptive management approach as outlined in the Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico (the Action Plan).

(2) Biological and environmental data from all SEAMAP-Gulf surveys are included in the SEAMAP Information System, managed in conjunction with National Marine Fisheries Service – Southeast Fisheries Science Center (NMFS-SEFSC). Raw data are edited by the collecting agency and verified by the SEAMAP Data Manager prior to entry into the system. Data from all SEAMAP-Gulf surveys during 1982-2003 have been entered into the system, and data from 2004 surveys are in the process of being verified, edited, and entered for storage and retrieval.

Data Limitations: Monitoring for shelf-wide conditions are currently performed each year primarily, but not exclusively, in July. The spatial boundaries of some monitoring efforts are limited by resource availability. Experience with the datasets has shown that when data are plotted or used in further analysis, outlying values may occasionally be discovered.

Error Estimate: (1) The manufacturers state +/- 0.2mg/L as the error allowance for both SeaBird and Hydrolab oxygen sensors.

References:
Mississippi River/Gulf of Mexico Watershed Nutrient Task force.2001. Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico. Washington, DC.

Rabalais N.N., R.E. Turner, Dubravko Justic, Quay Dortch, and W.J. Wiseman. 1999. Characterization of Hypoxia. Topic 1 Report for the Integrated assessment on Hypoxia in the

Gulf of Mexico. NOAA Coastal Ocean Program Decision Analysis Series No. 15. Silver Spring Maryland: National Oceanic and Atmospheric Administration.

Hendee, J.C. 1994. Data management for the nutrient enhanced coastal ocean productivity program. *Estuaries* 17:900-3

Rabalais, Nancy N., W.J. Wiseman Jr., R.E. Turner ; Comparison of continuous records of near-bottom dissolved oxygen from the hypoxia zone of Louisiana. *Estuaries* 19:386-407

SEAMAP Information System http://www.gsmfc.org/sis.html

GOAL 4 OBJECTIVE 5

FY 2007 Performance Measures:

- **Identification and evaluation of in silico, biochemical and molecular indicators that can be used to validate the predictiveness of high through put tools for categorizing potential for toxicity for a subset of well studied chemicals such as food use pesticides**
- **Improved risk assessment tools and characterization of ecological risks of genetically modified crops**
- **Conduct numerical air quality simulations using as input regional climate modeling, emissions modeling, and driver scenarios**
- **Final Air Quality Criteria Document (AQCD) for Lead which serves as the basis for the EPA/OAQPS staff paper for the National Ambient Air Quality Standard (NAAQS)**
- **Complete 16 human health assessments of high priority chemicals for interagency review or external peer review, including acrylonitrile, methanol, methylene chloride, trichloroethylene, and dioxin for interagency review**
- **Improved protocols for screening and testing (PART Measure)**
- **Effects and exposure milestones met (PART Measure)**
- **Assessment milestones met (PART Measure)**
- **Risk management milestones met (PART Measure)**
- **Provide guidance documents, journal articles or models to support efficient and effective outdoor clean-ups and safe disposal of decontamination wastes after chemical, biological, or radiological terrorist attacks. These materials can be used by emergency and remedial response personnel, and building and facility managers**

- **Generate emergency/laboratory capacity documents, guidance or other tools to improve the standardization of methods and/or safety of personnel involved with the collection or analysis of environmental samples generated during a nationally significant**

- **Test and evaluate homeland security-related technologies and produce a technology evaluation report for each. The reports will contain detailed performance information that can be used by emergency and remedial response personnel, water utility operators, and building and facility managers for selecting technologies for purchase and for deployment in protecting against or recovering from a chemical, biological, or radiological terrorist**

- **Provide products, such as monitoring systems, journal articles, analytical methods, and detectors, to enhance the security of water systems (through early detection of a contamination attack of a water system) and prepare for a terrorist attack on water system (through improved analytical techniques and response techniques for treatment of the water and decontamination of the infrastructure). Intended for use by water utilities, first responders and Local, State and Federal Government**

- **Evaluate relevant health and risk-related information and data and summarize into usable tools, such as applied risk assessment methodologies, guidance, and journal articles, to support risk assessors and other decision-makers in the rapid assessment of risk and the determination of cleanup goals and procedures following the contamination of buildings/facilities, water distribution systems or outdoor areas with chemical, biological or radiological agents as a result of a terrorist**

Performance Database: Program outputs.

Data Source: Internal tracking system, the Integrated Management Resources System (IMRS).

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

FY 2007 Performance Measure:

- **Number of states using a common monitoring design and appropriate indicators to determine the status and trends of ecological resources and the effectiveness of national programs and policies (PART measure)**

Performance Database: Internal Regional EPA tracking system; Environmental Monitoring and Assessment Program (EMAP) database for public access. The internal tracking database is for partners in twenty-three states. These data have not undergone QA and are works-in-progress. The public database, on the other hand, contains all information that has completed QA and has been made public in the National Coastal Condition Report.

Data Source: Survey responses from coastal states that have adopted a standard protocol for monitoring the ecological condition of estuaries; including, probabilistic sampling designs, response designs for indicators, laboratory analyses, statistical analyses and reporting formats.

Methods, Assumptions and Suitability: EPA has a cooperative agreement with twenty-three states to conduct the National Coastal Assessment Monitoring survey. As part of the National Coastal Assessment (NCA) Quality Assurance Program, participating states are trained on the application of the probability-based sampling design and standardized methods required for sample collection.

QA/QC Procedures: Each State or Cooperative Agreement recipient participates in an extensive, three-level QA review process outlined in the Quality Assurance Project Plan coordinated by EPA's National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division (AED).

Data Quality Reviews: The NCA Program monitors and assesses the quality of the data collected. To ensure a high quality data set, states collect a suite of field data for laboratory analysis. The states may elect to forward the samples to a national contract laboratory or conduct the analytical analyses themselves. The results of the field and laboratory analyses are sent to AED for incorporation into an internal EPA regional database.

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: EPA anticipates by 2007, all states will have adopted and implemented the National Coastal Assessment Monitoring survey. Improvements in the management of contracts, coordination of the shipment of samples, and distribution of resulting data are now performed by EPA to give states without capability opportunity to partner with the agency.

References:

US EPA. 2000. Coastal 2000 Northeast Component Information Management Plan. Office of Research and Development, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division, Narragansett, RI.

US EPA. 2001. Environmental Monitoring and Assessment Program (EMAP): National Coastal Assessment Quality Assurance Project Plan, 2001-2004. EPA/620/R-01/002. Office of Research and Development, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, FL.

US EPA. 2001 National Coastal Condition Report. EPA-620/R-01/005. Office of Research and Development & Office of Water, Washington, DC.

US EPA. 2005. National Coastal Condition Report II. EPA-620/R-03/002. Office of Research and Development & Office of Water, Washington, DC.

US EPA. 2005. National Coastal Condition Report II. Appendix A - Quality Assurance. pp. 259-264. EPA-620/R-03/002. Office of Research and Development & Office of Water, Washington, DC.

US EPA. 2005. National Coastal Condition Report II. Appendix B - Three-Level QA Review of Coastal 2000 Northeast Database. pp. 265-266. EPA-620/R-03/002. Office of Research and Development & Office of Water, Washington, DC.

FY 2007 Performance Measure:

- **Percentage of planned outputs delivered in support of public health outcomes long-term goal (PART Measure)**
- **Percentage of planned outputs delivered in support of mechanistic data long-term goal (PART Measure)**
- **Percentage of planned outcputs delivered in support of the aggregate and cumulative risk long-term goal (PART Measure)**
- **Percentage of planned outputs delivered in support of the susceptible subpopulations long-term goal (PART Measure)**
- **Average time (in days) to process research grant proposals from RFA closure to submittal to EPA's Grants Administration Division, while maintaining a credible and efficient competitive merit review system (as evaluated by external expert review) (PART Measure)**

Performance Database: No internal tracking systems.

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

GOAL 5 OBJECTIVE 1

VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES

FY 2007 Performance Measures:

- **Percentage of concluded enforcement cases (including SEPs) requiring that pollution be reduced, treated, or eliminated**
- **Pounds of pollution estimated to be reduced, treated, or eliminated as a result of concluded enforcement actions**
- **Percentage of concluded enforcement cases (including SEPs) requiring implementation of improved environmental management practices**
- **Dollars invested in improved environmental performance or improved environmental management practices as a result of concluded enforcement actions (i.e., injunctive relief and SEPs)**
- **Pounds of pollutants reduced, treated, or eliminated as a result of audit agreements**

Performance Databases: The Integrated Compliance Information System, (ICIS), which tracks EPA civil enforcement (e.g., judicial and administrative) actions. The Criminal Case Reporting System (CCRS), the new enhanced database for tracking criminal enforcement actions, will track the criminal enforcement components of the pollution reduction and improved environmental management measures and, conjunction with ICIS, will track the criminal enforcement recidivism measure.

Data Source: Most of the essential data on environmental results in ICIS are collected through data developed originally through the use of the Case Conclusion Data Sheet (CCDS), which

Agency staff begin preparing after the conclusion of each civil (judicial and administrative) enforcement action. EPA implemented the CCDS in 1996 to capture relevant information on the results and environmental benefits of concluded enforcement cases. The information generated through the CCDS is used to track progress for several of the performance measures. The CCDS form consists of 27 specific questions which, when completed, describe specifics of the case; the facility involved; information on how the case was concluded; the compliance actions required to be taken by the defendant(s); the costs involved; information on any Supplemental Environmental Project to be undertaken as part of the settlement; the amounts and types of any penalties assessed; and any costs recovered through the action, if applicable. The CCDS documents whether the facility/defendant, through injunctive relief, must: (1) reduce pollutants; and (2) improve management practices to curtail, eliminate or better monitor and handle pollutants in the future. The Criminal Enforcement Program also maintains a separate case conclusion data form and system for compiling and quantifying the results of criminal enforcement prosecution, including pollution reduction and the percentage of concluded criminal enforcement cases requiring improved environmental management practices. The revised criminal enforcement case conclusion form will be used in FY06.

Methods, Assumptions and Suitability: For enforcement actions which result in pollution reductions, the staff estimate the amounts of pollution reduced for an immediately implemented improvement, or an average year once a long-term solution is in place. There are established procedures for the staff to calculate, by statute, (e.g., Clean Water Act), the pollutant reductions or eliminations. The procedure first entails the determination of the difference between the current Aout of compliance@ quantity of pollutants released and the post enforcement action Ain compliance@ quantity of pollutants released. This difference is then converted into standard units of measure.

QA/QC Procedures: Quality Assurance/Quality Control procedures [See references] are in place for both the CCDS and ICIS entry. There are a Case Conclusion Data Sheet Training Booklet [See references] and a Case Conclusion Data Sheet Quick Guide [See references], both of which have been distributed throughout Regional and Headquarters= (HQ) offices. The criminal enforcement program has prepared a companion guide for use by its field agents. Separate CCDS Calculation and Completion Checklists [See references] are required to be filled out at the time the CCDS is completed. Criminal enforcement measures are quality assured by the program at the end of the fiscal year.

Quality Management Plans (QMPs) are prepared for each Office within The Office of Enforcement and Compliance Assurance (OECA). OC=s QMP, effective for 5 years, was approved July 29, 2003 by the Office of Environmental Information (OEI) and is required to be re-approved in 2008. OECA instituted a requirement for semiannual executive certification of the overall accuracy of ICIS information to satisfy the Government Performance and Results Act (GPRA), the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement. In addition, in FY 2003, the Office of Compliance (OC) established extensive processes for ensuring timely input, review and certification of ICIS information. OC implements this process on a quarterly basis to assure a high level of quality of the data in the ICIS data system.

Data Quality Review: Information contained in the CCDS and ICIS are required by policy to be reviewed by regional and headquarters= staff for completeness and accuracy. ICIS data is reviewed quarterly and reviewed and certified at mid-year and end-of-year.

Data Limitations: The pollutant reductions or eliminations reported on the CCDS are estimates of what will be achieved if the defendant carries out the requirements of the settlement. Information on expected outcomes of state enforcement is not available. The estimates are based on information available at the time a case is settled or an order is issued. In some instances, this information will be developed and entered after the settlement, during continued discussions over specific plans for compliance. Because of the time it takes to agree on the compliance actions, there may be a delay in completing the CCDS. Additionally, because of unknowns at the time of settlement, different levels of technical proficiency, or the nature of a case, OECA=s expectation is that based on information on the CCDS, the overall amounts of pollutant reductions/eliminations will be prudently underestimated.

Error Estimate: Not available

New & Improved Data or Systems: In November 2000, EPA completed a comprehensive guidance package on the preparation of the Case Conclusion Data Sheet. This guidance, issued to headquarters= and regional managers and staff, was made available in print and CD-ROM, and was supplemented in FY 2002 [See references]. The guidance contains work examples to ensure better calculation of the amounts of pollutants reduced or eliminated through concluded enforcement actions. EPA trained each of its ten regional offices during FY 2002. OC=s Quality Management Plan was approved by OEI July 29, 2003, and is effective for five years. [See references]. A new criminal enforcement case management, tracking and reporting system (Criminal Case Reporting System) will come on line during FY 2006 that will replace the existing criminal docket (CRIMDOC). This new system allows for a more user friendly database and greater tracking, management, and reporting capabilities.

In FY 2006, a new version of the ICIS data system, ICIS 2.0, will become operational. The new data system will have all of the functionality of old ICIS (ICIS 1.0) but will also: a) add some functionality for tracking EPA enforcement and compliance activities and b) become the database of record for the Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) program, including all federal and state enforcement, compliance and permitting data. (States will be migrated in waves over to ICIS 2.0 from the predecessor data system, the Permit Compliance System (PCS), over a period of about two years.)

References: Quality Assurance and Quality Control procedures: Data Quality: Life Cycle Management Guidance, (IRM Policy Manual 2100, dated September 28, 1994, reference Chapter 17 for Life Cycle Management). Case Conclusion Data Sheets: Case Conclusion Data Sheet, Training Booklet, issued November 2000 available: http://www.epa.gov/compliance/resources/publications/planning/caseconc.pdf; Quick Guide for Case Conclusion Data Sheet, issued November 2000. Information Quality Strategy and OC=s Quality Management Plans: Final Enforcement and Compliance Data Quality Strategy, and Description of FY 2002 Data Quality Strategy Implementation Plan Projects, signed March 25, 2002. ICIS: U.S. EPA, Office of Enforcement and Compliance Assurance, ICIS Phase I,

implemented June 2002. Internal EPA database; non-enforcement sensitive data available to the public through the Freedom of Information Act (FOIA). Criminal Enforcement Division Case Conclusion

FY 2007 Performance Measure:

- **Percentage of regulated entities taking complying actions as a result of on-site compliance inspections and evaluations**

Performance Databases: ICIS and manual reporting by regions

Data Sources: EPA regional offices and Office of Civil Enforcement (specifically, the Clean Air Act (CAA)- Mobile Source program) and Office of Compliance – Agriculture Division.

Methods, Assumptions and Suitability: A new measurement tool, the Inspection Conclusion Data Sheet, (ICDS) will be used to analyze results from inspections/evaluations conducted under some of EPA=s major statutes. EPA will analyze data on the three pieces of information from the ICDS: on-site actions taken by facilities, deficiencies observed, and compliance assistance provided. The inspectors complete the Inspection Conclusion Data Sheet (ICDS) for each inspection or evaluation subject to ICDS reporting and the information is either entered into ICIS or reported manually by the Regions and HQ programs.

QA/QC Procedures: ICIS has been developed per Office of Information Management Lifecycle Management Guidance, which includes data validation processes, internal screen audit checks and verification, system and user documents, data quality audit reports, third party testing reports, and detailed report specifications for showing how data are calculated.

Data Quality Review: Regional manual reports are reviewed and checked against the inspection or evaluation data entered into other Agency databases (Air Facilities Subsystem (AFS), Permit Compliance System (PCS), Online Tracking Information System (OTIS), Integrated Data for Enforcement Analysis (IDEA)). Manual reports are also checked against ICIS if the Region entered the manual reported inspections/evaluations into that system. Information contained in the CCDS, ICDS and ICIS are required by policy to be reviewed by regional and headquarters= staff for completeness and accuracy. In FY2003, OECA instituted a requirement for semiannual executive certification of the overall accuracy of information to satisfy the GPRA, the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement. ICIS data are reviewed quarterly and certified at mid-year and end of year.

Data Limitations: Through FY 2005, ICIS is the database of record for only CAA 112(r) inspections and audits. Beginning in FY 2006, ICIS becomes the databases of record for all inspections that are not reported into one of the other legacy data bases (with the exception of the reporting by a couple of Regions' Underground Injection Control (UIC) inspections). The legacy databases into which certain program's inspections will continue to be reported are AFS, PCS, RCRAInfo, and NCDB/FTTS. Regions are encouraged to use ICIS specifically for ICDS

reporting, for all inspection programs. This may result in redundant, incomplete, or contradictory data.

New & Improved Data or Systems: In FY 2006, a new version of the ICIS data system, ICIS 2.0, will become operational. The new data system will have all of the functionality of old ICIS (ICIS 1.0) but will also: a) add some functionality for tracking EPA enforcement and compliance activities and b) become the database of record for the Clean Water Act (CWA) national Pollutant Discharge Elimination system (NPDES) program, including all federal and state enforcement, compliance and permitting data. (States will be migrating in waves over to ICIS 2.0 from the predecessor data system, the Permit Compliance System (PCS), over a period of about two years.)

References: ICIS: U.S. EPA, Office of Enforcement and Compliance Assurance, ICIS Phase I, implemented June 2002. Internal EPA database; non-enforcement sensitive data available to the public through the Freedom of Information Act (FOIA).

FY 2007 Performance Measures:

- **Percentage of regulated entities receiving direct compliance assistance from EPA reporting that they improved environmental management practices as a result of EPA assistance**

- **Percentage of regulated entities receiving direct assistance from EPA reporting that they reduced, treated, or eliminated pollution, as a result of EPA assistance**

Performance Database: EPA Headquarters and Regions will manage data on regulated entities receiving direct compliance assistance from EPA through ICIS.

Data source: Headquarters and EPA=s Regional offices will enter information in ICIS upon completion and delivery of media and sector-specific compliance assistance including workshops, training, on-site visits and distribution of compliance assistance tools. ICIS is designed to capture outcome measurement information such as increased awareness/understanding of environmental laws, changes in behavior and environmental improvements as a result of the compliance assistance provided.

Methods, Assumptions and Suitability: N/A

QA/QC: Automated data checks and data entry guidelines are in place for ICIS.

Data Quality Review: Information contained in the ICIS is reviewed by Regional and Headquarters staff for completeness and accuracy. In FY2003, OECA instituted a requirement for semiannual executive certification of the overall accuracy of information to satisfy the GPRA, the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement. ICIS data are reviewed quarterly and certified at mid-year and end of year.

Data Limitations: None

Error Estimate: None

New & Improved Data or Systems: EPA plans to improve and/or modify elements of the compliance assistance module in ICIS based on use of the system.

References: US EPA, Integrated Compliance Information System Compliance Assistance Module, February 2004; US EPA, Compliance Assistance in the Integrated Compliance Information System Guidance, February 20, 2004. US EPA, 2005 Guidance Addendum for Reporting Compliance Assistance in the Integrated Compliance Information system, March 2005.

GOAL 5 OBJECTIVE 2

FY 2007 Performance Measure:

- **Number of pounds reduced (in millions) in generation of priority list chemicals from 2001 baseline of 84 million pounds**

Performance Database: Toxics Release Inventory (TRI) provides facility/chemical-specific data quantifying the amount of TRI-listed chemicals entering wastes associated with production processes in each year. The total amount of each chemical in production-related wastes can be broken out by the methods employed in managing such wastes, including recycling, energy recovery, treatment, and disposal/release. Amounts of these wastes that are not recycled are tracked for this performance measure. The performance measure uses the Chemical Abstract System (CAS) numbers for the 23 chemicals identified by EPA as priority chemicals (http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm).

Data Source: Regulated facilities report facility-specific, chemical-specific release, waste and recycling data to EPA. For example, in calendar year 2003, 23,811 facilities filed 91,648 TRI reports.

Methods, Assumptions, and Suitability: TRI data are collected as required by Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. (40 CFR Part 13101; www.epa.gov/tri/). Only certain facilities in specific Standard Industrial Classification (SIC) codes are required to report annually the quantities of over 650 listed toxic chemicals and chemical categories released to each environmental medium and otherwise managed as waste (40 CFR Part 13101; www.epa.gov/tri/). Regulation requires covered facilities to use monitoring, mass balance, emission factors and/or engineering approaches to estimate releases and recycling volumes. For purposes of the performance measure, data controls are employed to facilitate cross-year comparisons: a subset of chemicals and sectors are assessed that are consistently reported in all years.

QA/QC Procedures: Most facilities use EPA-certified automated Toxics Release Inventory (TRI) Form R reporting tools, which contain automated error checking mechanisms. Upon receipt of the facilities' reports, EPA conducts automated edits, error checks, data scrubs, corrections and normalization during data entry and subsequent processing. The Agency does not control the quality of the data submitted by the regulated community. EPA does, however, work with the regulated community to improve the quality of their estimates.

Data Quality Review: The quality of the data contained in the TRI chemical reports is dependent upon the quality of the data that the reporting facility uses to estimate its releases and other waste management quantities. Use of TRI Form R by submitters and EPA's data reviews help assure data quality. The GAO Report Environmental Protection: EPA Should Strengthen Its Efforts to Measure and Encourage Pollution Prevention (GAO - 01 – 283, http://www.gao.gov/new.items/d01283.pdf), recommends that EPA strengthen the rule on reporting of source reduction activities. Although EPA agrees that source reduction data are valuable, the Agency has not finalized regulations to improve reporting of source reduction activities by TRI-regulated facilities.

Data Limitations: Use of the data should be based on the user's understanding that the Agency does not have direct assurance of the accuracy of the facilities' measurement and reporting processes. TRI release data are reported by facilities on a good faith, best-estimate basis. EPA does not have the resources to conduct on-site validation of each facility's reporting data, though on-site investigations do occur each year at a subset of reporting facilities.

Error Estimate: From the various data quality efforts, EPA has learned of several reporting issues such as incorrect assignment of threshold activities and incorrect assignment of release and other waste management quantities (EPA-745-F-93-001; EPA-745-R-98-012; www.epa.gov/tri/tridata/data_quality_reports/index.htm; www.epa.gov/tri/report/index.htm.)

For example, certain facilities incorrectly assigned a 'processing' (25,000 lb) threshold instead of an 'otherwise use' (10,000 lb) threshold for certain non-persistent, bioaccumulative and toxic (PBT) chemicals, so they did not have to report if their releases were below 25,000 lbs. Also, for example, some facilities incorrectly reported fugitive releases instead of stack releases of certain toxic chemicals.

New/Improved Data or Systems: EPA plans to develop regulations for improving reporting of source reduction activities by TRI reporting facilities.

References: <www.epa.gov/tri/> and <www.epa.gov/tri/report/index.htm>Bureau of Economic Analysis (BEA) indices are available at http://www.bea.gov/bea/regional/gsp/

FY 2007 Performance Measures:

- **Reduction in overall pounds of pollution**
- **Billions of BTUs of energy conserved**
- **Billions of gallons of water saved**
- **Millions of dollars saved through reductions in pollution**

- **Cumulative reduction of hazardous chemical releases to the environment and hazardous chemicals in industrial waste, in millions of pounds. (PART measure)**

The Agency's Pollution Prevention programs include Green Chemistry, Design for the Environment, Green Engineering, and other Pollution Prevention (P2) Programs. Each of these programs operates under the principles of the Pollution Prevention Act and works with others to reduce waste at the source, before it is generated. These programs are designed to facilitate the incorporation of pollution prevention concepts and principles into the daily operations of government agencies, businesses, manufacturers, nonprofit organizations, and individuals.

Performance Database: *Green Chemistry (GC):* EPA is developing an electronic database ("metrics" database) which will allow organized storage and retrieval of green chemistry data submitted to EPA on alternative feedstocks, processes, and safer chemicals. The database is being designed to store and retrieve, in a systematic fashion, information on the environmental benefits and, where available, economic benefits that these alternative green chemistry technologies offer. The database is also being designed to track the quantity of hazardous chemicals and solvents eliminated through implementation of these alternative technologies. Green Chemistry technology nominations are received up to December 31 of the year preceding the reporting year, and it normally takes 6-12 months to enter new technologies into the database. By the end of FY 2005, EPA expects to achieve its target of having a single instance of each unique nominated technology for 1996-2003 in the database.

Design for the Environment (DfE): DfE does not have a performance database. Instead, DfE is populating an evaluation spreadsheet for its programs (i.e., Alternatives to Lead Solder in Electronics, Furniture Flame Retardants Alternatives, the Formulator Program, and a collaboration with the Air Office on DfE approaches as implementation mechanisms for regulating Local Area Sources, such as Auto Refinishing). Spreadsheet content will vary by approach, and generally will include measures comparing baseline technologies or products to "cleaner" ones, as well as information on partner adoption and/or market share of cleaner alternatives; for example, the DfE formulator approach tracks chemical improvements (such as pounds of chemicals of concern no longer used by partners, and conversely pounds of safer ingredients) and resource savings. This information will allow benefit calculations. Information is collected on an ongoing basis.

Green Engineering (GE): Similar to the Green Chemistry Program, EPA will be developing an electronic database to keep track of environmental benefits of GE projects including, gallons of water, British Thermal Units (BTUs) and dollars saved and pounds of carbon dioxide (CO_2) emissions eliminated

Pollution Prevention (P2) Programs: EPA has worked closely with state and local P2 programs to develop a national system that will provide data on environmental outcomes (the core P2 metrics included in the above performance measures). Many EPA Regional offices, state and local P2 programs are currently collecting data on P2 program activities, outputs, and outcomes. EPA has worked successfully with these programs to reach consensus on standardized metrics, including definitions, and to reach consensus on an ongoing system to gather data on these metrics. The core measures in the National Pollution Prevention Results System were adopted in

April 2005. Over 25 state and state-level P2 organizations have signed Memoranda of Agreements to provide data using the metrics. The system will also benefit from new reporting requirements in EPA P2 grants. The new system has the cooperation of key stakeholder groups, such as the National Pollution Prevention Roundtable, which is currently updating a January 2003 report providing baseline data for the period 1990-2000 to add data from 2001-2003. The new system also has the cooperation of the regional Pollution Prevention Resource Exchange (P2RX) centers. As the system is implemented, data collected from the program will be placed in a new national database, facilitating convenient data storage and retrieval.

Data Source: *Green Chemistry (GC):* Industry and academia submit nominations annually to the Office of Pollution Prevention and Toxics (OPPT) in response to the Presidential Green Chemistry Challenge Awards. Environmental and economic benefit information is included in the nomination packages. The metrics database pulls this benefit information from the nominations.

Design for the Environment (DfE): The source of DfE's evaluation information varies by the approach and the partner industry. For example, in DfE's formulation improvement partnerships, partners provide proprietary information on both their original formulation and their environmentally improved one. Partners sign a memorandum of understanding with EPA/DfE which includes information on how the company uses cleaner chemistry to formulate a product, the environmental and health benefits of the product, and customer and sales information. For other partnerships, data sources typically include technical studies (e.g., cleaner technology substitutes assessments, life-cycle assessments) and market/sales/adoption information from associations.

Green Engineering (GE): Data will come from profiles of recognized projects by technical journals or organizations, such as the American Institute of Chemical Engineers, or directly reported by project leaders on industry projects or joint academia-industry projects.

Pollution Prevention (P2) Programs: State and local P2 programs will submit data as described above.

Methods, Assumptions, and Suitability: *Green Chemistry (GC):* The information will be tracked directly through internal record-keeping systems. No models or assumptions or statistical methods are employed.

Design for the Environment (DfE): Methods and assumptions vary by approach and partner industry. Each DfE partnership identifies and focuses on a unique set of chemicals and industrial processes. For most DfE approaches, the general method is to 1) develop a model for a "typical" or "average" facility, 2) assess the differences between traditional and alternative technologies on metrics such as toxics use, resource consumption, cost, and performance, 3) track market share of alternative technologies over time, and 4) multiply the increase in use of alternative, cleaner technologies by the environmental, cost, and performance differences identified in Step 2. Through this quantitative process, the Agency is able to calculate the benefits generated by the cleaner technology: e.g. how much toxics use reduction is occurring, how much less resources are consumed. Similarly, for DfE's formulation improvement approach, the method is to

analyze environmental (e.g., toxics use, resource consumption) and cost differences between the old and improved formulations. Proprietary information, including sales data, are provided by our partners. For each approach, we will develop a spreadsheet that includes the methods and assumptions.

Green Engineering (GE): The information will be tracked directly through EPA record keeping systems. No models or statistical extrapolations are expected to be used.

Pollution Prevention (P2) Programs: The data will come from state and local P2 programs as described above. No models or assumptions or statistical methods are employed.

QA/QC Procedures: All Pollution Prevention and Toxics programs operate under the Information Quality Guidelines as found at http://www.epa.gov/oei/qualityguidelines/index.html and under the Pollution Prevention and Toxics Quality Management Plan (QMP). The Quality Management Plan is for internal use only.

Green Chemistry: Data undergo a technical screening review by the Agency before being uploaded to the database to determine if they adequately support the environmental benefits described in the application. Subsequent to Agency screening, data are reviewed by an external independent panel of technical experts from academia, industry, government, and nongovernmental organizations (NGOs). Their comments on potential benefits are incorporated into the database. The panel is convened by the Green Chemistry Institute of the American Chemical Society, primarily for judging nominations submitted to the Presidential Green Chemistry Challenge Awards Program and selecting winning technologies.

Design for the Environment (DfE): Data undergo a technical screening review by DfE before being uploaded to the spreadsheet. DfE determines whether data submitted adequately support the environmental benefits described.

Green Engineering (GE): Data collected will be reviewed to ensure it meets EPA's Quality Guidelines in terms of transparency, reasonableness and accuracy.

Pollution Prevention (P2) Programs: Data will undergo technical screening review by EPA and other program participants (e.g., National Pollution Prevention Roundtable) before being placed in the database. Additional QA/QC steps to be developed, as appropriate.

Data Quality Review: All Office of Pollution Prevention and Toxics (OPPT) programs operate under EPA's Information Quality Guidelines as found at http://www.epa.gov/oei/qualityguidelines/index.html and under the OPPT Quality Management Plan (QMP).

Green Chemistry (GC): Review of industry and academic data as documented in U.S. EPA, Office of Pollution Prevention and Toxics, Green Chemistry Program Files available at http://www.epa.gov/opptintr/greenchemistry/

Design for the Environment (DfE): Not applicable.

Green Engineering (GE): Data collected will be reviewed to meet data quality requirements.

Pollution Prevention (P2) Programs: The new metrics and data system were based, in part, on recommendations in the February 2001 GAO report, "EPA Should Strengthen Its Efforts to Measure and Encourage Pollution Prevention" (GAO-01-283). They also incorporate work by such organizations as the Northeast Waste Management Officials Association, Pacific Northwest Pollution Prevention Resource Center, and National Pollution Prevention Roundtable
.

Data Limitations: *Green Chemistry (GC):* Occasionally data are not available for a given technology due to confidential business information (the Presidential Green Chemistry Challenge Awards Program does not process CBI). Because the Presidential Green Chemistry Challenge is a voluntary public program, it cannot routinely accept or process CBI. If the program stakeholders cannot verify a technology because of proprietary information, especially during the final judging stage of the awards program, they can and do ask EPA to conduct the verification internally. EPA will then ask the company to share confidential information with CBI-cleared OPPT staff in order for EPA to conduct the verification. It also is occasionally unclear as to what is the percentage market penetration of implemented alternative green chemistry technology (potential benefits vs. realized benefits). In these cases, the database is so noted.

Design for the Environment (DfE): Occasionally, data on innovative chemistries or technologies are claimed CBI by the developing company, thus limiting the implementation of beneficial pollution prevention practices on a wider scale.

Green Engineering (GE): There may be instances in which environment benefits are not clearly quantified. In those instances, the data will be excluded.

Pollution Prevention (P2) Programs: Limitations arise from the reliance on individual state and local P2 programs to gather data. These programs vary in attention to data collection from sources within their jurisdictions, data verification and other QA/QC procedures. Also, despite plans described above to move toward consistent metrics and definitions, some differences exist. EPA is attempting to address these concerns by strengthening reporting requirements in its P2 grants (which fund much of the state and local P2 work) and focusing those requirements on outcomes, adding comprehensive new grant reporting forms and databases which are parallel with the National P2 Results System, and adding a P2 component to EPA Information Exchange Network (which provides financial support and a comprehensive data system to link state data with EPA).

Error Estimate: *Green Engineering (GE):* There may be instances in which environmental benefits are not clearly quantified. In those instances, the data will be excluded. Not applicable for other programs contributing data to this measure.

New/Improved Data or Systems: *Green Chemistry (GC), Design for the Environment (DfE), Green Engineering (GE):* The American Chemistry Council (ACC) has initiated an industry self-monitoring program called Responsible Care. Beginning in 2003, member companies will collect and report on a variety of information. Measures tentatively include Toxics Release Inventory (TRI) releases; tons of CO_2 equivalent per pound of production; total BTUs consumed per pound

of production; systems for assessing or, reassessing potential environmental, health, and safety risks; percentage of products re-evaluated; percentage of commitments for chemical evaluation programs; documentation of process for characterizing and managing product risks; and documentation of communication of risk characterization results. Many of these measures are similar to the EPA program targets identified under Goal 5, Objective 2. These reports may be an invaluable source of industry baseline information. It is important that the EPA programs identified under Goal 5 evaluate the utility of the reports generated under the ACC's Responsible Care Program in support of the EPA's programs as well as the goals of Responsible Care. (CAPRM II, *Chemical and Pesticide Results Measures*, March 2003 pp. 313). The Pollution Prevention (P2) program's data collection system is currently under development through a partnership with the National Pollution Prevention Roundtable and EPA.

References:

Chemical and Pesticide Results Measures II: http://www.pepps.fsu.edu./CAPRM/index.html
Green Chemistry (GC): http://www.epa.gov/opptintr/greenchemistry/
Design for the Environment (DfE): http://www.epa.gov/opptintr/dfe/
Green Engineering (GE): http://www.epa.gov/opptintr/greenengineering/
Pollution Prevention (P2) Programs: http://www.epa.gov/oppt/p2home/index.htm
http://www.p2.org/workgroup/Background.cfm
http://www.epa.gov/Networkg/

FY 2007 Performance Measures:

- **Percent reduction in Toxics Release Inventory (TRI) chemical releases to the environment from the business sector per unit of production ("Clean Index")**

- **Percent reduction in TRI chemicals in production-related wastes generated by the business sector per unit of production ("Green Index")**

- **Percent reduction in Toxics Release Inventory (TRI) reported toxic chemical releases at Federal Facilities.**

Performance Database: TRIM: Toxics Release Inventory Modernization, formerly TRIS (Toxics Release Inventory System) provides facility/chemical-specific data quantifying the amount of TRI-listed chemicals entering wastes associated with production process in each year. The total amount of each chemical in production-related wastes can be broken out by the methods employed in managing such wastes, including recycling, energy recovery, treatment, and disposal/release. Amounts of these wastes that are not recycled are tracked for these performance measures. The fourth performance measure uses the Chemical Abstract System (CAS) numbers for the 23 chemicals identified by EPA as priority chemicals (http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm).

Data Source: Regulated facilities report facility-specific, chemical-specific release, waste and recycling data to EPA on a calendar year basis. For example, in calendar year 2003, 23,957

facilities filed 97,251 TRI reports. FY 2007 results will not be available until FY 2009 due to a two year data lag.

Methods, Assumptions, and Suitability: TRI data are collected as required by sections 313 of EPCRA and 6607 of Pollution Prevention Act (PPA) (40 CFR ' 372; www.epa.gov/tri/). Only certain facilities in specific Standard Industrial Classification (SIC) codes are required to report annually the quantities of over 650 listed toxic chemicals and chemical categories released to each environmental medium and otherwise managed as waste (40 CFR ' 372; www.epa.gov/tri/). Regulation requires covered facilities to use monitoring, mass balance, emission factors and/or engineering calculations approaches to estimate releases and recycling volumes. For the Clean and Green Index measures and priority list chemicals measure, data controls are employed to facilitate cross-year comparisons: a subset of chemicals and sectors are assessed that are consistently reported in all years; data are normalized to control for changes in production using published U.S. Bureau of Economic Analysis (BEA) gross product indices (chain-type quantity index for the manufacturing sector). [Please note the federal facility measure data are not normalized to control for changes in production.]

QA/QC Procedures: Most facilities use EPA-certified automated Toxics Release Inventory (TRI) FORM R reporting tools, which contain automated error checking mechanisms. Upon receipt of the facilities' reports, EPA conducts automated edits, error checks, data scrubs, corrections and normalization during data entry and subsequent processing to verify that the information provided by the facilities is correctly entered in TRIM. The Agency does not control the quality of the data submitted by the regulated community. EPA does, however, work with the regulated community to improve the quality of their estimates.

Data Quality Review: The quality of the data contained in the TRI chemical reports is dependent upon the quality of the data that the reporting facility uses to estimate its releases and other waste management quantities. Use of TRI Form R by submitters and EPA's performance data reviews combine to help assure data quality.

Data Limitations: Use of the data should be based on the user's understanding that the Agency does not have direct assurance of the accuracy of the facilities' measurement and reporting processes. TRI release data are reported by facilities on a good faith, best-estimate basis. EPA does not have the resources to conduct on-site validation of each facility's reporting data, though on-site investigations do occur each year at a subset of reporting facilities.

Error Estimate: From the various data quality efforts, EPA has learned of several reporting issues such as incorrect assignment of threshold activities and incorrect assignment of release and other waste management quantities (EPA-745-F-93-001; EPA-745-R-98-012; www.epa.gov/tri/tridata/data_quality_reports/index.htm; www.epa.gov/tri/report/index.htm.) For example, certain facilities incorrectly assigned a 'processing' (25,000 lb) threshold instead of an 'otherwise use' (10,000 lb) threshold for certain persistent, bioaccumulative and toxic (PBT) chemicals, so they did not have to report if their releases were below 25,000 lbs. Also, for example, some facilities incorrectly reported fugitive releases instead of stack releases of certain toxic chemicals.

New/Improved Data or Systems: To improve reporting efficiency and effectiveness, reduce burden, and promote data reliability and consistency across Agency programs, EPA simplified the Toxics Release Inventory (TRI) reporting requirements. The TRI Form Modification Rule effective September of 2005, will simplify data elements, reduced the number of reporting codes, and make two technical corrections to the regulations by correcting contact information and removing an outdated description of a pollution prevention data element. The revised TRI form, will allow the EPA to better target pollution prevention efforts, improve public access to information about source reduction and pollution control activities undertaken by some facilities, and encourage manufacturers to comply by making it easier to use. Please see the following for additional information on this rule: http://www.epa.gov/tri/tridata/modrule/index.htm

References: www.epa.gov/tri/ and additional citations provided above: EPA-745-F-93-001;EPA-745-R-98-012; http://www.epa.gov/tri/report/index.htm; www.epa.gov/tri/tridata/data_quality_reports/index.htm; OSWER priority chemicals and fact sheets http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm; www.epa.gov/tri/report/index.htm; Bureau of Economic Analysis (BEA) indices are available at http://www.bea.gov/bea/regional/gsp/.

FY 2007 Performance Measures:

- **Specific annual reductions in six media/resource areas: water use, energy use, materials use, solid waste generated, air releases, and water discharges**

- **Reduce 3.5 billion gallons of water use; 15.5 million MMBTUs of energy use; 1,000 tons of materials use; 440,000 tons of solid waste; 66,000 tons of air releases; & 12,400 tons of water discharges**

- **Reduce 3.7 billion gallons of water use; 16.3 million MMBTUs of energy use; 1,050 tons of materials use; 460,000 tons of solid waste; 66,000 tons of air releases; & 12,400 tons of water discharges**

Performance Databases: Both the Performance Track On-Line (a Domino database) and the Performance Track Members Database (a Microsoft Access database) store information that facilities have provided to EPA in applications and annual performance reports. Performance Track members select a set of environmental indicators on which to report performance over a three-year period of participation. The externally reported indicators (listed above) may or may not be included in any particular facility's set of indicators. Performance Track aggregates and reports only that information that a facility voluntarily reports to the Agency. A facility may make progress towards one of the above indicators, but if it is not among its set of "commitments", then Performance Track's data will not reflect the changes occurring at the facility. Similarly, if a facility's performance declines in any of the above areas and the indicator is not included among its set of commitments, that decline will not be reflected in the above results.

Members report on results in a calendar year. Fiscal year 2007 corresponds most closely with members' calendar year 2006. That data will be reported to the Performance Track program by

April 1, 2007. The data will then be reviewed, aggregated, and available for external reporting in September 2007. (Calendar year 2005 data will become available in September 2006.)

Data Source: All data are self-reported and self-certified by member facilities. As described below, Performance Track engages in quality control to the extent possible, but it does not conduct formal auditing. However, a criterion of Performance Track membership is the existence of an environmental management system (EMS) at the facility, a key element of which is a system of measurement and monitoring. Most Performance Track facilities have had independent third-party audits of their EMSs, which create a basis for confidence in the facilities' data. It is clear from submitted reports that some facilities have a tendency to estimate or round data. Errors are also made in converting units and in calculations. In general, however, EPA is confident that the externally reported results are a fair representation of members' performance.

Methods, Assumptions, and Suitability: Data collected from members' applications and annual performance reports are compiled and aggregated across those members that choose to report on the given indicator. The data reflect the performance results at the facility; any improvements or declines in performance are due to activities and conditions at the specific facility as a whole. However, in some cases, facilities report results for specific sections of a facility and this may not be clear in the reports submitted to the program. For example, Member A commits to reducing its VOCs from 1000 tons to 500 tons over a 3-year period. In Year 1, it reports a reduction of VOCs from 1000 tons to 800 tons. Performance Track aggregates this reduction of 200 tons with results from other facilities. But unbeknownst to Performance Track, the facility made a commitment to reduce its VOCs from Production Line A and is only reporting on its results from that production line. The facility is not intentionally hiding information from EPA, but mistakenly thought that its commitment could focus on environmental management activities at Production Line A rather than across the entire facility. Unfortunately, due to increased production and a couple of mishaps by a sloppy technician, VOC emissions at Production Line B increased by 500 tons in Year 1. Thus, the facility's VOC emissions actually increased by 300 tons in Year 1. Performance Track's statement to the public that the facility reduced its emissions by 200 tons is therefore misleading.

The data can be used to make year-to-year comparisons, but reviewers and analysts should bear in mind that Performance Track membership is constantly in flux. Although members should retain the same set of indicators for their three-year participation period, as new members join the program and others leave, the baseline constantly changes.

Due to unavoidable issues regarding the timing of the application period, a small subset of reported data will represent two years of performance at certain facilities, i.e., the baseline will be two years prior rather than one year.

QA/QC Procedures: Data submitted with applications and annual performance reports to the program are reviewed for completeness and adherence to program formatting requirements. In cases where it appears possible that data is miscalculated or misreported, EPA or contractor staff follows up with the facility. If the accuracy of data remains under question or if a facility has

provided incomplete or non-standard data, the database is coded to ensure that the data is excluded from aggregated and externally reported results.

Additionally, Performance Track staff visit up to 20% of Performance Track member facilities each year. During those visits, facilities are asked about their data collection systems and about the sources of the data reported to the program.

Performance Track contractors conduct a quality review of data entered manually into the database. Performance Track staff conduct periodic checks of the entered data.

As described, Performance Track is quality controlled to the extent possible, but is not audited in a formal way. However, a prerequisite of Performance Track membership is an environmental management system (EMS) at the facility, a key element of which is a system of measurement and monitoring. Most Performance Track facilities have had independent third-party audits of their EMSs, which create a basis for confidence in the facilities' data.

A Quality Management Plan is under development.

Data Quality Reviews: N/A.

Data Limitations: Potential sources of error include miscalculations, faulty data collection, misreporting, inconsistent reporting, and nonstandard reporting on the part of the facility. Where facilities submit data outside of the Performance Track On-Line system, Performance Track staff or contractors must enter data manually into the database. Manually entered data is sometimes typed incorrectly.

It is clear from submitted reports that some facilities have a tendency to estimate or round data. Errors are also made in converting units and in calculations. In general, however, EPA is confident that the externally reported results are a fair representation of members' performance.

Error Estimate: Not calculated.

New/Improved Performance Data or Systems: Since spring 2004, all Performance Track applications and annual performance reports have been submitted electronically (i.e., through the Performance Track On-Line system), thus avoiding the need for manual data entry. Additionally, the program is implementing a new requirement that all members gain third-party assessments of their EMSs. Also, the program has reduced the chances that data may reflect process-specific (rather than facility-wide) data by paying additional attention to the issue in the review process and by instituting "facility-wide data" requirements for all indicators.

References: Members' applications and annual performance reports can be found on the Performance Track website at https://yosemite.epa.gov/opei/ptrack.nsf/faMembers?readform. *Performance Track On-Line* and the *Performance Track Members Database* are not generally accessible. Performance Track staff can grant access to and review of the databases by request.

GOAL 5 OBJECTIVE 3

FY 2007 Performance Measures:

- **Percent of tribes with delegated and non-delegated programs (PART measure)**
- **Percent of tribes with EPA-reviewed monitoring and assessment occurring (PART measure)**
- **Percent of tribes with EPA-approved multimedia work plans (PART measure)**
- **Number of environmental programs implemented in Indian country per million dollars (PART efficiency measure)**

Performance Database:

EPA's American Indian Environmental Office (AIEO) developed an information technology infrastructure, named the Tribal Program Enterprise Architecture (TPEA). The TPEA is a suite of ten secure Internet-based applications that track environmental conditions and program implementation in Indian country as well as other AIEO business functions. One TPEA application, the Objective 5.3 Reporting System, tracks progress in achieving the performance targets under Goal 5 Objective 3 of EPA's National Strategic Plan – "Build Tribal Capacity." EPA staff use the Objective 5.3 Reporting System to establish program performance commitments for future fiscal years, to record actual program performance for overall national program management. Therefore, the Objective 5.3 Reporting System serves as the performance database for all of the annual performance measures.

Data Source:

The performance measure, "Percent of tribes with delegated and non-delegated programs," tracks the number of: Treatment in a manner similar to a State (TAS) approvals or primacies; implementations of a tribal program; executions of Direct Implementation Tribal Cooperative Agreements (DITCA); and GAP (General Assistance Programs) grants that have provisions for the implementation of solid waste or hazardous waste programs.

EPA Regional project officers managing Tribes with delegated and non-delegated environmental programs input data, classified by tribe, into the Objective 5.3 Reporting System to derive a national cumulative total.

The performance measure, "Percent of Tribes with EPA approved multi-media workplans," tracks the number of: Performance Partnership Grants (PPGs); Tribal Environmental Agreements (TEAs), Tier I, Tier II, and Tier III; Memoranda of Agreement (MOAs); and Memoranda of Understanding (MOUs).

EPA Regional tribal program liaisons input data, which are summed annually. It is possible a tribe will contribute to the measure in more than one way.

The performance measure, "Percent of tribes with EPA-reviewed monitoring and assessment occurring (cumulative)," reports the number of active Quality Assurance Project Plans (QAPPs). All ongoing environmental monitoring programs are required to have active QAPPs. Regional tribal program liaisons obtain the information from Regional Quality Assurance Officers and input it into the Objective 5.3 Reporting System. The data are updated continuously and summed at the end of the fiscal year.

The performance measure, "Number of environmental programs implemented in Indian Country per million dollars," is calculated annually by summing the number of tribes receiving GAP grants, the number of TAS approvals or primacies, the number of DITCAs, and the number of GAP grants that have provisions for the implementation of solid or hazardous waste programs and dividing that sum by the annual GAP appropriation (less rescissions and annual set-asides.)

Methods, Assumptions and Suitability: The Objective 5.3 Reporting System contains all the information for reporting on performance. The measure that tracks delegated and non-delegated programs can be cross-referenced and verified with records from the Integrated Grants Management System. The measure that tracks monitoring and assessment programs can be verified from databases maintained by the Regional Quality Assurance Officers. The measure that tracks multimedia work plans can be verified from official correspondence files between EPA Regions and Tribes, or from project officer case files.

QA/QC Procedures: Data used in the Tribal Program Enterprise Architecture contains quality assurance and metadata documentation prepared by the originating agency or program. Because the information in the Tribal Program Enterprise Architecture is used for budget and strategic planning purposes, AIEO requires adherence to the Agency's Information Quality Guidelines. <http://www.epa.gov/quality/informationguidelines/>

Data Quality Reviews: Data correction and improvement is an ongoing component of the Tribal Program Enterprise Architecture. The Objective 5.3 Reporting System relies on multiple staff-level reviews. In addition, a special application, the Tribal Information Management System (TIMS) Data Center was developed to support the submission of corrections to boundary information, narrative tribal profiles, and factual database information – particularly latitude and longitude coordinates for facilities. The AIEO collects and passes along recommendations regarding the correction or modification of databases whenever errors are detected or suggestions for database improvement are received. Each database manager retains the responsibility of addressing the recommended change according to quality assurance protocols. Because the data submittals are used for budget or strategic planning purposes, AIEO requires that all submittals comply with the Agency's Information Quality Guidelines. <http://www.epa.gov/quality/informationguidelines/>

Data Limitations: A large part of the data used by the Tribal Program Enterprise Architecture has not been coded to particular Tribes by the recording agency. AIEO uses new geographic data mining technologies to extract records based on the geographical coordinates of the data points. For example, if a regulated facility has latitude and longitude coordinates that place it in the boundaries of the Wind River Reservation, then it is assigned to the Arapaho and Shoshone Tribes of the Wind River Reservation. This technique is extremely powerful because it atribally

enables@ large numbers of information systems which were previously incapable of identifying Tribes. This approach will be applied to all EPA databases. There are limitations, however. When database records are not geographically identified with latitude and longitude, the technique does not work and the record is lost to the system. For EPA regulated facilities in the Facility Registry System, AIEO estimates that 64% have latitude and longitude recorded. Therefore, the accuracy of EPA's data concerning environmental conditions in Indian country will depend on additional improvements to Agency data systems.

Error Estimate: Analysis of variation of reservation boundary coverages available to EPA indicates deviations of up to 5%. Another source of error is that some records are not sufficiently described geographically to be assigned to specific Tribes. It is estimated that 36% of the regulated facilities in EPA's regulatory databases are not geographically described. The TPEA identifies the non-geographically indexed facilities by postal zip code for zip codes that overlap tribal boundaries.

New/Improved Data or Systems: The technologies used by the Tribal Program Enterprise Architecture are new, secure and state–of-the-art. The geographic interface is a product called ARC/IMS, which is a web-based application, with a fully functional scalable Geographic Information System (GIS). The Tribal Program Enterprise Architecture uses XML protocols to attach to and display information seamlessly and in real-time from cooperating agency data systems without having to download the data to an intermediate server. In addition, the TPEA project has developed web-based, secure data input systems that allow Regional project officers and tribal program liaisons to input programmatic data directly into performance reporting systems, TIMS and other customizable reports.

References:

Objective 5.3 Reporting System: https://oasint.rtpnc.epa.gov/TATS/tats_prv/entry_page
EPA's Information Quality Guidelines: http://www.epa.gov/quality/informationguidelines

GOAL 5 OBJECTIVE 4

FY 2007 Performance Measure:

- **Percent increase in Pollution Prevention/Sustainability program publications rated as highly cited papers**

Performance Database: No internal tracking system

Data Source: The source of data will be a contractor-produced bibliometric analysis of Pollution Prevention/Sustainability program publications.

Methods, Assumptions and Suitability: The analysis will be completed using Thomson's Essential Science Indicators (ESI) and Journal Citation Reports (JCR) as benchmarks. ESI are a comprehensive compilation of essential science performance statistics and science trends data derived from Thomson's databases. The chief indicator of output, or productivity, is journal

article publication counts. For influence and impact measures, ESI employs both total citation counts and cites per paper scores. The former reveals gross influence while the latter shows weighted influence, also called impact. JCR presents quantifiable statistical data, which provide a systematic, objective way to evaluate the world's leading journals and their impact and influence in the global research community.

QA/QC Procedures: Source data will be used in comparing program publications to field benchmarks, Essential Science Indicators (ESI) and Journal Citation Report (JCR).

Data Quality Reviews: Additional benchmarks will be used to determine the number of self-citations of articles by the same author in order to reduce the self-citation rate.

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References:

Essential Science Indicators®· Thomson Scientific. 2003.

Journal Citation Reports®. Thomson Scientific. 2003.

US EPA. December 2004. BOSC Program Review. Citation Analysis of ORD's Endocrine Disruptors (EDCs) Research Program, publication list.

ENABLING SUPPORT PROGRAMS

FY 2007 Performance Measures:

- **Percent to which competency/skill gaps are reduced (beginner to intermediate) in mission-critical occupations (MCO)**

- **Percent to which competency/skill gaps are reduced (intermediate to expert) in MCOs**

Database: Database populated with competency/skills of employees obtained from a self-assessment survey, and competency/skills deemed necessary within each occupation.

Methods, Assumptions and Suitability: Survey data will be used to provide current competency/skills of the present MCO employees. These data will be compared to what competency/skills EPA feels is necessary for mission accomplishment within each MCO to arrive at a baseline assessment.

Yearly surveys of the MCO employee base will be completed and compared to the baseline.

QA/QC Procedures: The Office of Human Resources will be conducting a survey of EPA's MCO workforce to reflect competency/skills possessed within each MCO grouping.

Data Quality Reviews: N/A

Data Limitations: Employees will self-assess their competency/skills. If they over-inflate or under-inflate this assessment, analysis of the information may not correctly identify gaps.

Error Estimate: N/A

New/Improved Data or Systems: This is a new competency/skills database.

References: This is a new competency/skills database.

FY 2007 Performance Measures:

- **Number of new hires recruited through EPA's Environmental Intern Program (EIP) in Mission Critical Occupations (MCO)**

Data Source: The Office of Human Resources (OHR) PeoplePlus system.

Methods, Assumptions and Suitability: Data on new hires through the EIP is collected by OHR and maintained by the National EIP Manager. Using the information from the PeoplePlus New Hire Report and consulting with the headquarters National EIP Manager, a determination can be made if the new hire in an MCO was recruited through the EIP.

QA/QC Procedures: PeoplePlus contains nature of action codes (NOAC) designating the type of personnel action taken and the appointing authority. Efforts are underway to establish an EIP designation code. The NOAC and an EIP identifier will more readily identify new hires in MCOs recruited through the EIP.

Data Quality Reviews: N/A

Data Limitations: N/A

Error Estimate: N/A.

New/Improved Data or Systems: The establishment of an EIP designation code in PeoplePlus will provide an integrated approach to identifying new hires through the EIP.

References: PeoplePlus.

FY 2007 Performance Measures:

- **Average time to hire non-SES positions from date vacancy closes to date offer is extended, expressed in working days**

Data Source: The Office of Human Resources (OHR) Ez-Hire System.

Methods, Assumptions and Suitability: Data on new hires is collected by OHR using the Ez-Hire system. A data file is obtained from the Ez-hire contractor and downloaded into Excel spreadsheets, which are formatted into the various components of the Office of Personnel Management's 45-day Hiring Model. OHR staff review the results and further investigate any data anomalies prior to finalizing the report and sending it to the servicing Human Resources Officer (HRO) who views and validates the data.

QA/QC Procedures: Ez-Hire contains new hire data from the time the vacancy is announced until the selection is made by the Selecting Official from the Referral Certification.

Data Quality Reviews: OHR staff review and analyze the results of the report, investigate any data anomalies, finalize the report, and send to the HRO. The servicing HRO further reviews and validates the data. Any discrepancies are reported to OHR's staff for review and remedy. The results of the OHR staff review is shared with the HRO.

Data Limitations: N/A

Error Estimate: N/A.

New/Improved Data or Systems: The Ez-Hire system provides adequate data for analysis of the average time to hire for non-Senior Executive Service (SES) applicants.

References: Ez-Hire

FY 2007 Performance Measures:

- **For SES positions, the average time from the date vacancy closes to date offer is extended, expressed in working days.**

Data Source: The Executive Resources Staff (ERS) weekly activity report. This is a text report that tracks SES personal actions through the various stages of the hiring process.

Methods, Assumptions and Suitability: Data from the weekly report is tracked and reported quarterly. ERS staff review the results and further investigate any data anomalies prior to finalizing the quarterly report.

QA/QC Procedures: Data are added as vacancy status changes

Data Quality Reviews: The ERS Operations Team Leader reviews data weekly, analyzes the results and notes instances where goals may not be met. The Team Leader meets with specialists to investigate any data anomalies in attempt to meet standards.

Data Limitations: N/A

Error Estimate: N/A.

New/Improved Data or Systems: N/A

References: Ez-Hire

FY 2007 Performance Measure:

- **Cumulative percentage reduction in energy consumption in EPA's 21 laboratories from the 2003 base**

Performance Database: The Agency's contractor provides energy consumption information quarterly and annually. The Agency keeps the energy consumption data in the "Energy Reporting System." The contractor is responsible for validating the data.

Data Source: The Agency's contractor collects quarterly energy data from each of EPA's laboratories. The data are based on metered readings from the laboratory's utility bills for certain utilities (natural gas, electricity, purchased steam, chilled water, high temperature hot water, and potable water) and from on-site consumption logs for other utilities (propane and fuel oil). The data from the on-site consumption logs are compared to invoices to verify that reported consumption and cost data are correct.

Methods, Assumptions, and Suitability: N/A

QA/QC Procedures: EPA's Sustainable Facilities Practices Branch compares reported energy use at each facility against previous years' data to see if there are any significant and unexplainable increases or decreases in energy quantities and costs.

Data Quality Reviews: N/A

Data Limitations: EPA does not have a formal meter verification program to ensure that an on-site utility meter reading corresponds to the charges included in the utility bill.

New/Improved Data or Systems: N/A

References: N/A

FY 2007 Performance Measures:

- **The Central Data Exchange (CDX) will fully support electronic data exchange requirements for major EPA environmental systems, enabling faster receipt, processing, and quality checking of data**
- **States will be able to exchange data with CDX through state nodes in real time, using new web-based data standards that allow for automated data-quality checking**
- **States, tribes, laboratories, and others will choose to use CDX to report environmental data electronically to EPA, taking advantage of automated data quality checks and on-line customer support.**
- **Customer-help desk calls resolved in a timely fashion.**

Performance Database: CDX Customer Registration Subsystem.

Data Source: Data are provided by state, private sector, local, and tribal government CDX users.

Methods, Assumptions, and Suitability: All CDX users must register before they can begin reporting to the system. The records of registration provide an up-to-date, accurate count of users. Users identify themselves with several descriptors.

QA/QC Procedures: QA/QC have been performed in accordance with a CDX Quality Assurance Plan [*Quality Assurance Project Plan for the Interim Central Data Exchange System*. Document number: EP005T7. Sept. 17, 2001] and the CDX Design Document v.3, Appendix K registration procedures [*Central Data Exchange Electronic Reporting Prototype System Requirements*: Version 3; Document number: EP005S3. December 2000]. Specifically, data are reviewed for authenticity and integrity. The CDX Quality Assurance Plan was updated in FY 2004 [Quality Assurance Project Plan for the Central Data Exchange," 10/8/2004; contact: Wendy Timm, 202 566 0725] to incorporate new technology and policy requirements. Work is underway to complete the revision of the Design Document. Automated edit checking routines are performed in accordance with program specifications and CDX quality assurance guidance [*Quality Assurance Project Plan for the Interim Central Data Exchange System*. Document number: EP005T7. Sept. 17, 2001].

Data Quality Reviews: CDX successfully completed independent security risk assessment in the summer 2001. In addition, routine audits of CDX data collection procedures and customer service operations are provided weekly to CDX management and staff for review. Included in these reports are performance measures such as the number of CDX new users, number of submissions to CDX, number of help desk calls, number of calls resolved, ranking of errors/problems, and actions taken. These reports are reviewed and actions discussed at weekly project meetings.

Data Limitations: The CDX system collects, reports, and tracks performance measures on data quality and customer service. While its automated routines are sufficient to screen systemic problems/issues, a more detailed assessment of data errors/problems generally requires a secondary level of analysis that takes time and human resources.

Error Estimate: CDX incorporates a number of features to reduce errors, such as pre-populating data whenever possible, edit checks, etc. The possibility of an error in the number of

states registered for CDX, e.g., double-counting of some sort, is extremely remote (far less than 1 %).

New/Improved Performance Data or Systems: CDX coalesces the registration/submission requirements of many different state-to-EPA, private sector-to-EPA, and local and tribal governments-to-EPA data exchanges into a single web-based system. The system allows for a more consistent and comprehensive management and performance tracking of many different external customers. The creation of a centralized registration system, coupled with the use of web forms and web-based approaches to submitting the data, invite opportunities to introduce automated quality assurance procedures for the system and reduce human error.

References: CDX website (www.epa.gov/cdx).

FY 2007 Performance Measure:

- **Establish an improved suite of environmental indicators for use by EPA's programs and partners in the Agency's strategic planning and performance measurement process**

Performance Database: Initial collection of indicators compiled during the drafting of EPA's "Report on the Environment," supplemented by indicators currently used in the Agency's strategic planning and performance measurement process (e.g., EPA's Strategic Plan, Annual Performance Plan, Annual Performance Report, Annual Operating Plan, and National Environmental Performance Partnership Agreements), will comprise an Agency baseline of indicators (http://www.epa.gov/indicators/roe/index.htm).

Methods, Assumptions and Suitability: The Office of Environmental Information (OEI), the Office of Research and Development (ORD), and the Office of the Chief Financial Officer (OCFO) will review the planning documents and establish a baseline of indicators in consultation with key Agency steering committees.

QA/QC Procedures: As the baseline is established, protocols also will be developed to ensure that the data supporting the indicators are accurate and complete.

Data Quality Reviews: To be determined and conducted once a baseline has been established.

Data Limitations: The challenge is to develop suitable indicators with sufficient data of known quality.

Error Estimate: To be determined.

New/Improved Performance Data or Systems: The baseline indicators and supporting data are in development.

References: EPA's "Draft Report on the Environment" and "Technical Support Document" (EPA pub. no. 260-R-02-006). Draft Report on the Environment Technical Document (Publication # EPA 600-R-03-050). Both Dated June 2003

Web site: http://www.epa.gov/indicators/roe/html/roePDF.htm

FY 2007 Performance Measure:

- **Percent compliance with criteria used by OMB to assess Agency security programs reported annually to OMB under the Federal Information Security Management Act (FISMA)**

Performance Database: Automated Security Self-Evaluation and Remediation Tracking (ASSERT) database.

Data Source: Information technology (IT) system owners in Agency Program and Regional offices.

Methods, Assumptions, and Suitability: Annual IT security assessments are conducted using the methodology mandated by the Office of Management and Budget (OMB), the National Institute of Standards, and Technology (NIST) Security Self-Assessment Guide for Information Technology Systems. ASSERT has automated and web-enabled this methodology.

QA/QC Procedures: Automated edit checking routines are performed in accordance with ASSERT design specifications to ensure answers to questions in ASSERT are consistent. The Office of Inspector General consistent with §3545 FISMA, and the Chief Information Officer's information security staff conduct independent evaluations of the assessments. The Agency certifies results to OMB in the annual FISMA report.

Data Quality Reviews: Program offices are required to develop security action plans composed of tasks and milestones to address security weaknesses. Program offices self-report progress toward these milestones. EPA's information security staff review these self-reported data, conduct independent validation of a sample, and discuss anomalies with the submitting office.

Data Limitations: Resources constrain the security staff's ability to validate all of the self-reported compliance data submitted by program systems' managers.

Error Estimate: N/A

New/Improved Data or Systems: N/A

References:
Annual Information Security Reports to OMB: http://intranet.epa.gov/itsecurity/progreviews/; OMB guidance memorandum: http://www.whitehouse.gov/omb/memoranda/2003.html; ASSERT web site: https://cfint.rtpnc.epa.gov/assert/; NIST Special Publication 800-26, *Security Self_Assessment Guide for Information Technology Systems*, November 2001: http://csrc.nist.gov/publications/nistpubs/index.html; and, Federal Information Security Management Act, PL107-347: http://csrc.nist.gov/policies/FISMA_final.pdf

FY 2007 Performance Measures:

- **Number of environmental risks reduced, environmental actions taken, and environmental recommendations/risks/best practices identified.**

- **Number of actions taken for improved business practices and systems, criminal/civil/administrative actions, business recommendations/risks/best practices, and potential dollar return identified.**

Performance Database: The OIG Performance Measurement and Results System captures and aggregates information on an array of measures in a logic model format, linking immediate outputs with long-term intermediate outcomes and results. Because intermediate and long-term results may not be realized for several years, only verifiable results are reported in the year completed, while others remain prospective until completed and verified. Database measures include numbers of: 1) recommendations for environmental and management improvement, including management of assistance agreements; 2) legislative, regulatory policy, directive, or process changes; 3) environmental, program, and security and resource integrity risks identified, reduced, or eliminated; 4) best practices identified and implemented; 5) examples of environmental and management improvements; 6) monetary value of funds questioned, saved, fined, or recovered; and 7) public or congressional inquiries resolved.

Data Source: Designated OIG staff enter data into the system. Data are from OIG performance evaluations, audits, research, court records, EPA documents, data systems, and reports that track environmental and management actions or improvements made and risks reduced or avoided. OIG also collects independent data from EPA's partners and stakeholders.

Methods, Assumptions, and Suitability: OIG performance results are a chain of linked events, starting with OIG outputs (e.g., recommendations, reports of best practices, and identification of risks). The subsequent actions taken by EPA or its stakeholders/partners, as a result of OIG's outputs, to improve operational efficiency and environmental program delivery are reported as intermediate outcomes. The resulting improvements in operational efficiency, risks reduced/eliminated, and conditions of environmental and human health are reported as outcomes. By using common categories of performance measures, quantitative results can be summed and reported. Each outcome is also qualitatively described, supported, and linked to an OIG product or output. The OIG can only control its outputs, and has no authority, beyond its influence, to implement its recommendations that lead to environmental and management outcomes.

QA/QC Procedures: All performance data submitted to the database require at least one verifiable source assuring data accuracy and reliability. Data quality assurance and control are performed as an extension of OIG products and services, subject to rigorous compliance with the Government Auditing Standards of the Comptroller General[27], and regularly reviewed by OIG management, an independent OIG Management Assessment Review Team, and external

[27] Government Auditing Standards (2003 Revision), General Accounting Office, GAO-03-673G, June 2003

independent peer reviews. Each Assistant Inspector General certifies the completeness and accuracy of performance data.

Data Quality Reviews: There have not been any previous audit findings or reports by external groups on data or database weaknesses in the OIG Performance Measurement and Results System. All data reported are audited internally for accuracy and consistency.

Data Limitations: All OIG staff are responsible for data accuracy in their products and services. However, there is a possibility of incomplete, miscoded, or missing data in the system due to human error or time lags. Data supporting achievement of results are often from indirect or external sources, with their own methods or standards for data verification/validation.

Error Estimate: The error rate for outputs is estimated at +/-2%, while the error rate for reported long-term outcomes is presumably greater because of the longer period needed for tracking results. Errors tend to be those of omission.

New/Improved Data or Systems: The OIG developed the Performance Measurement and Results System as a prototype in FY 2001 and anticipates replacing it in FY 2006 with a more sophisticated system designed to integrate data collection and analysis. We also expect the quality of the data to improve as staff gain greater familiarity with the system and measures. This system is a best practice in government for linking an array of measures from outputs to eventual results and impacts. With enhanced linkages to customer satisfaction results and resource investments, it will provide a full-balanced scorecard with return on investment information for accountability and decision making.

References: All OIG non-restricted performance results are referenced in the OIG Performance Measurement and Results System with supporting documentation available either through the OIG Web Site or other Agency databases. The OIG Web Site is www.epa.gov/oig.[28]

[28] U.S. EPA, Office of Inspector General, Audits, Evaluations, and Other Publications, Available on the Internet at www.epa.gov/oig, last updated November 30, 2005