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EPA Office of Compliance Sector Notebook Project

Profile of Tribal Government Operations
Chapter III

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http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/tribal.html

CHAPTER 3. TRIBAL GOVERNMENT OPERATIONS

Tribal governments, regardless of size, location, or demographics, provide a variety of services to their populations. This chapter provides an overview of many of these operations and activities, presents the potential environmental impacts of the operations/activities, and identifies the environmental requirements to which these operations/activities may be subject. The following sections are not exhaustive discussions of every aspect of the specific tribal operation. Instead, they attempt to highlight activities with the greatest potential to impact the environment. Chapter 4 presents additional information on specific environmental requirements.

A significant aspect of all of the operations presented in this chapter is pollution prevention. Not only does pollution prevention reduce the amount of waste that must undergo treatment and disposal, it also plays an important role in helping regulated facilities achieve compliance. For these reasons, this chapter begins with an overview of pollution prevention and its relationship with compliance; additionally, each section on a specific operation discusses pollution prevention practices.

3.1 POLLUTION PREVENTION AND COMPLIANCE ASSISTANCE

Pollution knows no boundaries. Pollution originating in the air, on the land, in the water, even on the other side of the world, can eventually disperse around the globe and degrade human health and the environment. Pollution prevention can be applied across these environmental media (*i.e.*, air, water, and land) to address both point source and nonpoint sources of pollution.

Pollution prevention, also known as source reduction, is any practice that eliminates or reduces pollution at its source. Pollution prevention is achieved through material substitutions, process changes, and the more efficient use of natural resources (*e.g.*, raw materials, energy, water, and other resources). Through pollution prevention, the use and production of hazardous substances can be minimized, thereby protecting human health, strengthening economic well-being, and preserving the environment.

> The **EPA's Pollution Prevention (P2)** Web site [http://www.epa.gov/p2/] offers up-to-date information about pollution prevention practices and source reduction programs and initiatives administered by EPA and other organizations. For additional pollution prevention information specifically for tribes, and to share your tribe's pollution prevention successes with others, go to **Tribal Pollution Prevention** Web site [http://www.tribalp2.org/].

3.1.1 Benefits of Pollution Prevention

Pollution prevention is one of the best ways for tribes to conserve natural resources and decrease chemical exposures and environmental degradation. At the same time, reducing pollution also allows tribes to meet compliance standards, save money on materials and energy costs, and reduce liability. Information on waste streams, along with pollution prevention tips and strategies, is included in this chapter.

Putting pollution prevention practices in place can:

- Help tribes and tribal facilities meet compliance standards;
- Improve practices and procedures to ensure continued compliance; and
- Reduce risk of employee exposure to hazardous waste by creating safer working conditions.

Practicing pollution prevention can:

- Save money in production and material costs;
- Reduce solid and hazardous waste disposal costs; and
- Increase regulatory compliance and avoid penalty fees.

3.1.2 Implementation of Pollution Prevention

Many tribal governments integrate pollution prevention into their operations. Tribal pollution prevention practices can be applied across a wide variety of operations, including during wastewater pretreatment, purchasing and procurement opportunities, building construction and operation, and educational activities.

3.2 PURCHASING PRACTICES THAT ENCOURAGE REGULATORY COMPLIANCE AND POLLUTION PREVENTION

> **The Office of the Federal Environmental Executive** [http://www.ofee.gov/gp/gp.htm] provides information on the **Federal Green Purchasing Program** and a wealth of other green purchasing tools.

Tribal governments use numerous products as they perform services for tribal members. Product manufacturing (including raw material extraction), transportation, use, and disposal can generate byproducts that stress tribal, national, and global environmental resources and pose health threats to product users and the public. By incorporating environmental and health criteria into purchasing specifications, tribal governments can reduce or avoid the use of potentially harmful chemicals, reduce the risk of accidents and toxic releases, and more easily achieve regulatory compliance.

Green purchasing practices (*e.g.* purchasing energy efficient equipment, low toxicity cleaning materials, recycled content products) are important components of effective pollution prevention programs and can also lead to cost savings, manifested in reduced energy costs and reduced hazardous material disposal costs.

Presidential Executive Order 13101 (which strengthens Executive Order 12873) *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, directs federal agencies to set goals to increase their use of recycled content products and other environmentally preferable products and services. Many tribal and state governments have voluntarily adopted policies that support the Executive Order and have increased their procurement of recycled products and products that are less hazardous, non-toxic, energy efficient, and generate less waste.

3.2.1 ENVIRONMENTALLY-PREFERABLE PRODUCT ALTERNATIVES

The waste stream, and the types of emissions generated by the activities of tribal governments, is directly affected by the products they purchase or use. Choosing environmentally-preferable alternatives to products that are considered hazardous, or that contribute to wastes covered under environmental regulations, is a preventive strategy available to any tribe involved in product requisition. Various sections of the *Tribal Profile* provide information on specific wastes generated and pollution prevention opportunities as does EPA's Environmentally Preferable Purchasing Web site [http://www.epa.gov/opptintr/epp/], where you will find tools, documents, and guidance, including a comprehensive database for specific products.

3.2.2 TOP POLLUTION PREVENTION OPPORTUNITIES

The following list highlights selected strategies for preventing pollution through purchasing practices:

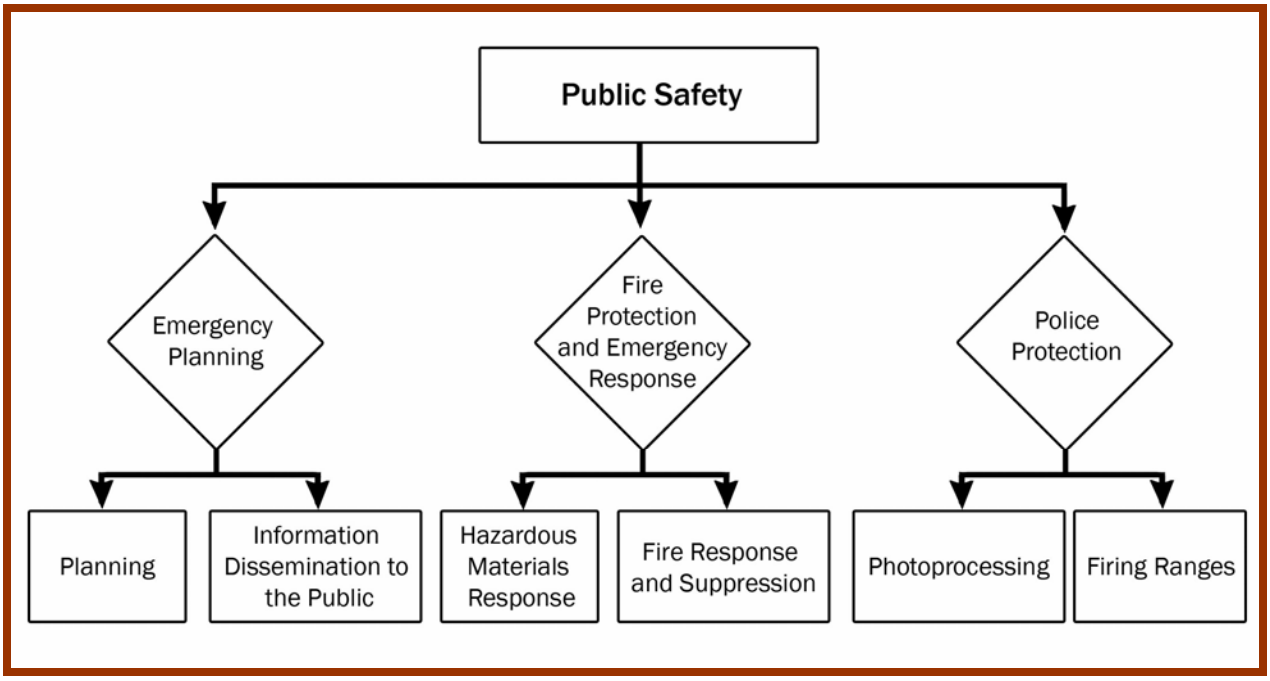
- Adopt a purchasing policy that promotes the integration of environmental and health criteria in all product specifications;
- Educate tribal staff about health effects associated with chemicals commonly contained in the products they use or are exposed to, and provide information on alternatives;
- Choose one department/operation at a time to incorporate environmentally-preferable products; start with a group where you are most likely to succeed. Review final product specifications with product users or operation supervisors to ensure that their needs are satisfied;
- Encourage users to choose environmentally-preferable products;
- Involve product end-users throughout the decision-making process. Request that vendors perform product demonstrations for staff, and compare products;
- Review all purchases and read all product Material Safety Data Sheets and product labels for potential environmental and health impacts prior to purchase and use;
- Check products for durability;
- Make sure products can be safely used and stored (*e.g.*, adequate storage locations and ensure personal protective equipment is available).
- Avoid purchasing products that are potentially harmful to the user, public, or environment (*e.g.*, contain known or suspected carcinogens or other toxic ingredients), or purchase the least toxic products available to do the job.
- Prevent the generation of hazardous wastes in operations by eliminating products that contain hazardous ingredients.
- Participate in cooperative purchasing ventures with other jurisdictions to increase availability of environmentally-preferable products, leverage purchasing power, and reduce internal costs associated with the formal bid process.
- When researching environmental purchasing, utilize resources and expertise available from vendors, manufacturers, government agencies, non-profits, and other organizations.
- Consider environmental and health impacts associated with a product's life cycle prior to drafting bid specifications ("product life cycle" includes raw material extraction or development, product manufacturing, transportation to market, product use, and disposal).
- Implement waste reduction activities (e.g., lease agreements that require vendors to take responsibility for products as they become obsolete; require prospective bidders to avoid excess paper and packaging in their bid and proposal submittals such as avoiding plastic covers and dividers, using both sides of paper, and using post-consumer recycled content paper; specify copiers and printers with double-sided printing capabilities).

- Begin an energy conservation program and invest in energy-efficient equipment and building design (specify EPA "Energy Star" certified equipment and require equipment installers to activate efficiency features upon product installation).

3.3 PUBLIC SAFETY

Tribal governments help ensure public safety and provide emergency planning, fire protection, and police protection. Emergency planning and response activities include analyzing community hazards, developing a local emergency response plan to prepare for and respond to oil and chemical emergencies, and responding to hazards and suppressing them. Exhibit 3-1 outlines the range of public safety activities a tribal government may undertake.

Exhibit 3-1. Public Safety



3.3.1 CHEMICAL EMERGENCY PREPAREDNESS AND PREVENTION

> **The RCRA, Superfund, and EPCRA Training Module** [http://www.epa.gov/superfund/contacts/sfhotlne/cerep.pdf] contains release-reporting requirements, gives some general information on EPCRA, and provides hotline phone numbers.

In general, tribal governments have the basic responsibility for understanding risks posed by chemicals, managing and reducing those risks, and handling emergencies on land under their jurisdiction. Some tribal governments must meet requirements both as regulated entities, and as regulators, under the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA regulates both emergency planning and the dissemination of information on certain chemicals to the public.

EPCRA and the Clean Air Act's (CAA) chemical accident prevention provisions in section 112(r), require facilities to report on hazardous chemicals they store or handle. These two laws provide an array of complementary information on what chemicals are in the community: what chemicals are present at each location, what hazards these chemicals pose, what chemical releases have occurred in the area, and, what steps industry is taking to prevent additional accidents. The information can be used to enhance the community emergency response plan and protect tribal communities from chemical hazards.

3.3.1.1 PLANNING: TRIBAL EMERGENCY RESPONSE COMMISSIONS AND OTHER OPTIONS

Eligible tribes may assume the same role as states in the development of chemical emergency preparedness and prevention programs under EPCRA and the CAA. There are several other options available to tribes to ensure effective EPCRA coverage in Indian country; these options involve working with another tribe, or a consortium of tribes, or the state within which it is located, to achieve a workable program. Every community in the United States, including Indian reservations, must be part of a comprehensive plan.

Tribal Emergency Response Committee

Under sections 301-303m of EPCRA, tribal governments that do not enter into cooperative agreements with states or other tribes establish Tribal Emergency Response Committees (TERCs) to ensure the development of an emergency planning and implementation structure sufficient to meet the reservation's needs. A TERC functions as the focal point of EPCRA compliance, regardless of how much the tribe works independently or contracts with outside agencies. If a TERC is not established, and the tribal government has not entered into a cooperative agreement to provide this function, then the tribal executive branch (this may be the

tribal chief executive or body) operates as the TERC and is responsible for the planning committee's functions.

> Visit **EPA's Chemical Emergency Preparedness and Prevention Web** site [http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/index.html] for information about chemical emergency preparedness and prevention programs and initiatives administered by EPA and other organizations. Tribes may wish to review the Gila River Indian Communities emergency planning code at the **Model Tribal Emergency Response Commission** Ordinance page [http://www.chemicalspill.org/tribal.html].

TERCs can provide training, technical assistance, and information to communities within Indian country so they know what to do in the event of a chemical accident. Additionally, TERCs establish procedures for receiving and processing public requests for information collected under EPCRA, and obtain further information about a particular chemical or facility, when needed. Finally, TERCs supervise a Local Emergency Planning Committee (LEPC). Federal funding for TERC activities may be available from EPA's Chemical Emergency Preparedness and Prevention Office or from the Federal Emergency Management Agency. See Appendix F, EPA Financial Assistance Resources.

LEPC Responsibilities

Tribal governments that establish TERCs are not required to establish a LEPC. If a TERC decides to establish a LEPC, then the LEPC could be given authority to develop a contingency plan to prepare for and respond to emergencies involving hazardous substances on the reservation. If the TERC does not establish a LEPC, then the TERC is responsible for all aspects of the emergency planning and response program outlined below.

If a tribe forms a LEPC, its membership includes, at a minimum, tribal officials such as police, fire, civil defense, public health, transportation and environmental professionals, industry representatives of facilities subject to the emergency planning requirements of EPCRA, community groups, and the news media. All members of the LEPC may be tribal members.

A LEPC-developed contingency plan should include:

- The identity and location of hazardous materials;
- Procedures for an immediate response to a chemical accident;
- Public notification of evacuation or shelter-in-place procedures;
- Industry contact names; and
- Timetables for testing and updating the plan.

In addition to requirements imposed by EPCRA and the CAA, tribal governments must comply with all applicable federal right-to-know laws. Tribal governments may require steps in addition to the ones imposed by EPCRA.

Other Emergency Response Options

Tribal governments may decide not to establish a TERC. Instead, tribal governments may decide to develop an EPCRA program through formal collaboration with another tribe or tribes, or the adjacent state(s). These collaborative EPCRA programs could be designed to meet specific tribal needs and leverage resources. For example, a TERC could implement some but not all of EPCRA's requirements, while allowing a state to implement other appropriate parts of the program through a cooperative agreement with the State Emergency Response Commission (SERC). Another option is for a tribe to authorize the SERC to perform appropriate functions of the TERC within Indian country, to establish a LEPC, or join an off-reservation LEPC, that works directly with the SERC through a cooperative agreement.

3.3.1.2 Risk Management Program

Under CAA section 112(r), all chemical facilities with processes exceeding a threshold quantity for 77 acutely toxic substances (such as chlorine and ammonia) and 63 highly volatile flammable substances (when used as fuel) must adopt a Risk Management Program (RMP). All facilities must submit a summary, with RMP, to EPA. The RMP includes:

> The **National Safety Council's Environmental Health Center Web** site [http://www.nsc.org/ehc/rmp.htm contains information on Risk Management Programs, including safety, compliance, and enforcement issues.

- The facility hazard assessments, including worst-case release and alternative release scenarios;
- The facility accident prevention activities, such as the use of special safety equipment, employee safety training programs, and process safety hazards analyses conducted by the facility;
- The past chemical accidents at a facility;
- The management system in place at the facility; and
- The facilities emergency response program.

At present, EPA has authority for implementing CAA section 112(r) for Indian country. Tribes that EPA finds eligible for treatment in the same manner as a state under the CAA's Tribal Air Rule (40 CFR Part 49) can apply for authorization to administer the RMP program. Under this

approach tribes should ensure that their chemical safety regulatory program is at least as stringent as the federal program in order to strengthen enforcement capabilities.

3.3.1.3 PROVIDING CHEMICAL INFORMATION TO THE PUBLIC

Under EPCRA, LEPCs receive hazardous chemical inventory and emergency release information submitted by facilities and have access to toxic chemical release information supplied by facilities to EPA. LEPCs can provide this information to tribal officials, tribal community leaders, and the public to aid in preparing for emergencies and managing chemical risks.

The following describes the EPCRA reporting requirements for chemicals:

- ***Hazardous Chemical Reporting***. Under EPCRA, TERCs/LEPCs receive hazardous chemical inventory information submitted by facilities and make it available to the public upon request. Facilities with chemicals that are present in excess of certain amounts are required to submit either actual copies of Material Safety Data Sheet (MSDS) or lists of MSDSs chemicals to LEPC, the TERC, and the local fire department. This reporting requirement has been in effect since October 1987. In addition, these facilities must submit annual inventories to the same agencies, which are due on March 1 of each year. TERCs/LEPCs make this information available to the public, and fire departments and public health officials use the information to plan for and respond to emergencies. Tribal governments may be subject to the reporting requirements if they have or use any of the specific chemicals in excess of the threshold amounts.

- ***Emergency Release Notification***. Under EPCRA, TERCs/LEPCs receive emergency release information submitted by facilities and make it available to the public upon request. A facility is required to immediately notify the community and the tribe (*i.e.*, the TERC and the LEPC) of a release of more than a predetermined amount of certain hazardous chemicals. Chemicals covered by this requirement include not only the 366 "extremely hazardous substances," but also more than 700 hazardous substances subject to the emergency notification requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) hazardous waste cleanup law. The emergency release notification activates emergency plans, and the information on emergency releases is considered in the LEPC planning process. Tribal governments are also subject to this notification requirement. All oil spills are to be reported to the National Response Center (NRC) at (800) 424-8802.

- ***Toxic Chemical Release Reporting***. TERCs/LEPCs, as well as the public, have access to an EPA database called the Toxic Release Inventory (TRI), which contains information on annual toxic chemical releases submitted by certain facilities. Under EPCRA, specific facilities must estimate and report each year the total amount of toxic chemicals that they release into the environment, either accidentally or as a result of routine plant operations, or transport as waste to another location. EPA's TRI Explorer offers access to TRI data to help tribes and communities identify facilities, hazardous substances, and chemical disposal or other release patterns that warrant further study and analysis.

> Combined with hazard and exposure information, **EPA's TRI Explorer** Web site [http://www.epa.gov/triexplorer/] can be a valuable tool for risk identification.

3.3.2 Fire Protection and Emergency Response

Tribal governments may be responsible for providing fire protection services to their communities. Fire protection services and responsibilities include fire response and suppression (*i.e.*, firefighting), salvage (*i.e.*, pumping water out of basements), investigation of fires, repair and maintenance of equipment, and fire prevention. Tribal fire departments may also be the first to respond to a hazardous chemical emergency (*i.e.*, hazardous response).

Some tribal governments have their own fire departments that operate on the reservation. These fire departments have their own equipment and employees and operate within the reservation boundaries. Other tribes contract with off-reservation fire departments and private companies to provide firefighting services on the reservation. Several tribes coordinate with fire departments from surrounding jurisdictions to provide "first response" and other services to reservations and the surrounding areas.

The size and type of tribal firefighting operations depend upon several factors, such as population density, cost, reservation size, the range and type of flammable objects, topography, and staffing abilities.

3.3.2.1 Fire Protection

Fire departments have a primary role in emergency planning and mitigation, including fire response and suppression, and hazardous materials response. Because fire protection activities can affect the environment, they may be subject to environmental laws and regulations, as indicated in the following list:

- Emergency planning – EPCRA
- Fire response and suppression – CAA and EPCRA
- Hazardous materials response – Resource Conservation and Recovery Act (RCRA) and Clean Water Act (CWA)

3.3.2.2 Emergency Planning

Firefighters may be appointed to TERCs/LEPCs under the emergency planning provisions of EPCRA. Tribal fire departments may also receive information about hazardous chemicals from facilities in the form of MSDSs or lists of MSDS chemicals and hazardous chemical inventory forms which are submitted to the TERC and LEPC. Tribal first responders should be properly trained to deal with emergencies involving chemical hazards.

3.3.2.3 Fire Response and Suppression

Agents used for fire suppression vary based on the location and type of fire. Halons, which are low toxicity, chemically stable compounds, have been used historically for fire and explosion protection. Halons are now known to contribute to the depletion of the ozone layer and have been phased out of production; the production and importation of new halons is banned in the United States. Recycled halon is now the only source of supply.

Firefighters use a number of traditional fire extinguishing agents, including water, carbon dioxide, dry chemicals, and foam, that are good alternatives to halons for many fire protection applications. Research has led to the commercialization of new agents and technologies, such as halocarbon compounds, inert gas mixtures, water-mist or fogging systems, and powdered aerosols. The potential environmental impacts from firefighting activities using water are soil and water contamination from runoff. Also, many conventional synthetic foams contain solvents regulated under EPCRA.

3.3.2.4 Emergency Response to Hazardous Materials Release

In the event of a spill, TERCs and LEPCs can take the steps necessary to protect public health and safety as well as the environment.

The Emergencies, Accidents, and Spills page of EPA's Solid Waste and Emergency Response Web site [http://www.epa.gov/oswer/emergencies.htm] has up-to-date information on Emergency Response – sudden threats to the public health and the environment arising from the release or potential release of oil, radioactive materials, or hazardous chemicals into the air, land, or water.

If another party is responsible for a hazardous materials spill, tribes may seek to bill the responsible party for the expenses incurred in protecting the community and the environment. In addition, reimbursement may be sought for any materials used by safety personnel to control a spill, protect the environment, and mitigate the hazard.

Depending upon the type of hazardous material released, various response techniques may be used to control the spill and minimize the impacts on human health and the environment. The key to effectively combating spills is careful selection and proper use of the equipment and materials most suited to the type of spill and the conditions at the spill site. The types of response techniques include:

Response techniques:
- Mechanical containment and recovery
- Chemical and biological methods
- Physical Methods

- Mechanical containment or recovery, such as booms, barriers, and skimmers, as well as sorbent materials, that are used to capture and store the spilled material until it can be disposed of properly;
- Chemical and biological spill containment methods such as chemical and biological agents, the use of which requires EPA or U.S. Coast Guard On Scene Coordinator authorization per the National Contingency Plan, as listed in 40 CFR 300.900; and
- Physical methods, such as natural processes of evaporation, oxidation, and biodegradation. As these processes take time, they might not be the most expeditious, depending on the type of spill.

Sorbents contaminated with hazardous materials must be disposed of according to the hazardous waste provisions of RCRA.

3.3.3 POLICE PROTECTION

Tribal police protection involves law enforcement, traffic safety, and other activities related to preservation of law and order in areas that contain tribal members. Some tribal governments have assumed police responsibilities entirely while other tribes either contract with, or rely on, BIA for this service. In either case, primary policing responsibilities include patrol, investigative/detective force, traffic regulation, and crime prevention.

3.3.3.1 FIRING RANGES

Firing practices may contaminate the soil, and possibly the groundwater, with lead from the birdshot, bullets, and bullet fragments, as well as produce airborne lead dust.

Firing ranges can install devices that intercept and collect the shot and bullets for recycling and substitute less hazardous materials (*e.g.*, plastic and steel shot) for the lead shot. To reduce and/or eliminate lead pollution, many indoor and outdoor firing ranges use bullet "traps." Bullet traps use a rubber medium to capture bullets and contain them, as well as a filter system to eliminate airborne lead dust. These traps prevent the lead pollution of air and soil, which would normally occur from a bullet's impact with metal, sand, or the ground. Most firing ranges hire salvage companies to recover, clean, and recycle the bullet traps and filter systems. The disposal of bullets and bullet fragments recovered from a bullet trap may be regulated under the hazardous waste provisions of RCRA.

EPA's current position is that firing of birdshot, bullets, and bullet fragments at firing ranges is considered to be within the normal and expected use pattern of the manufactured product, and is not a waste management activity subject to the RCRA regulations. The bullets and bullet fragments are not characterized as "hazardous wastes" because they have not been discarded. Where an imminent and substantial endangerment to health or the environment may have been created by expended shot or debris, however, remedial requirements may apply under RCRA. In addition, the remediation of lead-contaminated soil at a firing range, either for maintenance or site closure, is regulated under the hazardous waste provisions of RCRA and/or CERCLA. Under the provisions of EPCRA, firing ranges must report releases of lead dust transported by the wind. A release is reportable when more than 1 pound of lead particles smaller than 0.004 inches in diameter is released beyond the boundaries of the site or facility.

A discharge of lead shot, other ammunition, or broken targets into waters of the United States would be considered a discharge of pollutants into navigable waters and, thus, require a CWA National Pollutant Discharge Elimination System (NPDES) permit. EPA's policy on shooting

ranges is found in "Best Management Practices for Lead at Outdoor Shooting Ranges" [http://www.epa.gov/region2/waste/leadshot/].

3.3.4 POLLUTION PREVENTION AND PUBLIC SAFETY

Public safety operations, especially emergency planning and response activities, can involve tribal, industry and other community representatives. Within the public safety arena, tribal governments have responsibilities as a regulated entity, an enforcement agent, a generator of various waste streams, and a provider of quality services to the constituents they serve. Pollution prevention can help tribal governments efficiently and effectively meet the regulatory requirements associated with public safety operations, provide value added services, and protect their community from chemical emergencies. The three primary functions associated with public safety are emergency planning, fire protection and emergency response, and police protection. The opportunities for pollution prevention within these three primary functions can best be realized by examining both a list of the wastes generated and the specific services provided through each of these functions.

3.3.4.1 POLLUTION PREVENTION: EMERGENCY PLANNING

There are many pollution prevention opportunities associated with emergency planning. This is true even though no significant wastes are associated with emergency planning other than any wastes created by the clean up of a specific release.

Tribes involved in emergency planning and response can promote and use pollution prevention as a tool to better manage the risks in their communities by working with facilities to reduce and eliminate the chemicals posing the risk. Through EPCRA, tribes and communities are provided valuable information regarding the presence, quantities, and release of chemicals in their environment. This information can be used to identify prevention priorities and establish a basis for tribes, tribal members, and EPA to target and approach specific facilities.

Top Pollution Prevention Opportunities

- Encourage facilities which are required to develop risk management plans to consider pollution prevention strategies to reduce the type and quantity of chemicals stored on-site to avoid this EPCRA and CAA regulation;
- Establish a tribal pollution prevention task force to investigate ways to access federal pollution prevention resources to address chemical concerns and priorities;

- Incorporate pollution prevention requirements into Right-to-Know and other tribal laws; and
- Sponsor and/or co-sponsor pollution prevention workshops and other educational events for industrial facilities.

3.3.4.2 Pollution Prevention: Fire Protection and Emergency Response

Pollution prevention opportunities associated with fire prevention and emergency response include limiting the use and generation of waste. Fire protection services usually involve vehicle and equipment maintenance activities similar to those associated with public works and other tribal government operations. For specific guidance regarding pollution prevention opportunities for vehicle/equipment maintenance operations, please refer to Section 3.12.4.

Top Pollution Prevention Opportunities

- Incorporate pollution prevention strategies through training and response protocols that will minimize the waste generated and long-term environmental impacts associated with the response incident without compromising human health and property;
- Incorporate strategies within emergency and fire response protocols and responder training courses to maximize the containment of spilled materials and contaminated fire suppression run-off and to prevent migration to waterways, sewers, and permeable surfaces;
- Incorporate the use of reusable absorbent booms and pads for materials containment to replace clay and other absorbent materials that can only be used once. Reusable booms and pads can provide the opportunity to recover a percentage of the material released and significantly reduce the amount of waste generated;
- Consider the use of halon-free suppression materials where appropriate and develop a specific protocol for using halon suppressants only for situations where a suitable alternative is not available;
- Review training exercises and other drill activities for opportunities to substitute less hazardous and non-hazardous materials, and incorporate water reuse and conservation measures where and when the effectiveness of the training is not compromised; and
- Promote site-specific pollution prevention strategies through fire code inspections and enforcement activities.

3.3.4.3 POLLUTION PREVENTION: POLICE PROTECTION

Many activities related to police protection can produce waste, including photoprocessing wastes (fixers, developers, film cleaners, etc.), vehicle maintenance wastes, gun cleaning wastes (solvents, rags), shooting range wastes (spent casings, lead slugs, lead dust emissions), batteries, and office paper and other solid wastes.

Top Pollution Prevention Opportunities

- Consider the use of digital cameras to eliminate and/or reduce the need for photoprocessing;
- Recycle photo waste; most liquid photoprocessing wastes can be recycled through a large commercial photoprocessing company or metals reclaimer;
- Consider the use of ceramic or other non-lead bullets for training where the effectiveness of the training is not compromised. Where alternatives to lead bullets are not suitable, the use of traps and other devices should be employed at both indoor and outdoor shooting ranges to capture bullets and bullet fragments for recycling; and
- Recycle office paper, cardboard, and other significant solid waste streams.

3.4 HEALTHCARE

Tribes, the federal government (*i.e.*, the Indian Health Service), and a variety of public and private parties operate hospitals and healthcare facilities in Indian country to support the healthcare needs of tribal communities and tribal members. These operations include small hospitals, clinics, physician and dentist offices, diabetes centers, home-based care, alternative medicine, nutritional counseling, pharmacies, dental and orthodontic care, substance abuse treatment, mental health counseling, and preventive care. These operations also include ambulatory healthcare services, nursing and residential care facilities, and social assistance.

EPA's **Profile of the Healthcare Industry** [http://www.hercenter.org/links/] and the **Healthcare Environmental Resource Center** Web site [http://www.hercenter.org] provide detailed compliance and pollution prevention information on the healthcare sector. Tribes may also want to obtain information from the **Indian Health Service** Web site [http://www.ihs.gov/].

Many healthcare activities also result in the generation of waste and air or water pollution. Healthcare operations can contribute to the presence of mercury, dioxin, and other persistent, bioaccumulative toxics (PBTs) in the environment. Healthcare operations also generate a wide

variety of hazardous waste, such as chemotherapy and antineoplastic chemicals, mercury, solvents, formaldehyde, photographic chemicals, radionuclides, and waste anesthetic gases. In addition, healthcare providers produce tons of solid waste and may also own or operate hospital/medical/infectious waste incinerators (HMIWI), underground storage tanks, aboveground storage tanks, boilers, air conditioners, motor vehicle fleets, and engage in other activities associated with construction and property management. Pesticides, including but not limited to disinfectants, are also used in healthcare facilities.

Producing an exhaustive list of every healthcare activity that impacts the environment or is regulated would be extremely cumbersome and ultimately would distract the focus from those functions within the healthcare industry that create problem wastes and pollution. That said, EPA's *Profile of the Healthcare Industry* identifies key functions and activities that are the major sources of waste and pollution within health sector institutions.

After identifying environmental impacts by activity, healthcare facilities can begin to address the major waste streams and emission sources. Healthcare wastes can be categorized as follows:

- ***Municipal solid waste.*** The majority of healthcare wastes are produced under circumstances identical to restaurants and food industry facilities, hotels, and office complexes. The industry generates large volumes of solid waste (much of which could be sub-categorized as recyclable waste). A special subcategory of municipal solid waste to be considered is construction and demolition (C&D) debris.

- ***Biohazardous waste.*** Regulated under the Medical Waste Tracking Act of 1988, this healthcare waste can potentially harbor and transmit infectious diseases. This includes a wide range of materials that are considered contaminated or that pose special risks.

- ***Hazardous waste.*** To be considered hazardous waste under RCRA, waste must either be listed or characteristic. Listed wastes are specifically named in 40 CFR Part 261. Characteristic wastes are ignitable, reactive, corrosive, or toxic. There are some special waste streams that fall most logically under the heading of "hazardous" because of their unique nature and the risks inherent in each of them. The *Profile of the Healthcare Industry* refers to them as pharmaceutical waste, commingled waste (*e.g.*, commingled "biohazardous," chemical waste or mixed radioactive waste, and commingled nonhazardous and hazardous wastes), pressurized containers and ignitable compressed gas, and universal waste. In some cases, each of these "special" wastes is RCRA listed or RCRA characteristic wastes, and disposal should follow the RCRA hazardous waste requirements.

- ***Air emissions.*** At hospitals, air emissions come from boilers, air conditioning and refrigeration, HMIWI (if on site), asbestos, paint booths, ethylene oxide sterilization units, emergency generators, anesthesia, laboratory chemicals, and laboratory fume hoods. HMIWI are used by hospitals, healthcare facilities, and commercial waste disposal companies to burn hospital waste and/or medical/infectious waste. When burned, hospital waste and medical/infectious waste may emit various air pollutants, including hydrochloric acid, dioxin/furan, and toxic metals (*i.e.*, lead, cadmium, mercury).

In each case, healthcare providers may be subject to multiple federal and tribal environmental laws and regulations. Potentially applicable federal laws include: the CAA, CWA, EPCRA, and RCRA. Tribal governments should obtain EPA's *Profile of the Healthcare Industry* and review a variety of T*ribal Profile* sections, including those on Construction/Property Maintenance, Solid Waste Management, and Pesticides Management to better assess their regulatory requirements.

3.4.1 HOSPITALS, HEALTHCARE WORKERS AND EMERGENCY RESPONSE

Hospitals are vital to the success of any emergency response plan. Ambulance crews and emergency room personnel must know how to transport and treat victims of exposure to hazardous chemicals. Without such knowledge, victims of chemical accidents can contaminate emergency rooms and cause hospitals to close temporarily.

Doctors, nurses, and trained medical professionals can be a valuable resource in emergency planning and response. They can also be an important source of information about risks to the public health in their communities. Some of the ways they can participate in emergency planning include:

- Volunteering to be a health professional representative on the LEPC, or offering to assist the LEPC in its work;
- Participating in programs to train medical personnel to deal with emergencies involving chemical hazards; and
- Screening information submitted under EPCRA to determine if any acute or chronic health effects may be associated with hazardous substances on the reservation.

In a more general sense, health professionals may be approached to provide and interpret information on chemicals and their impacts on patients. The law allows health professionals to

gain access to chemical identity information, even if it is claimed as trade secret, in three different situations:

- If the chemical identity is needed for the diagnosis and treatment of an exposed person;
- If a medical emergency exists in which the chemical identity is needed to aid in diagnosis or treatment; and
- If a health professional who is a tribal government employee requests a chemical's identity to conduct preventive research studies and to render medical treatment.

Except for medical emergencies, a written statement of need and a confidentiality agreement must accompany a health professional's request for a chemical's identity.

3.4.2 POLLUTION PREVENTION AND HEALTHCARE

Within the healthcare industry, numerous opportunities exist to prevent pollution. By implementing well-planned pollution prevention strategies, facilities can improve efficiencies, save money, minimize adverse environmental impacts, and create a healthier workplace. Opportunities vary from facility to facility and relate to the volumes and types of activities. The *Profile of the Healthcare Industry* and the Healthcare Environmental Resource Center Web site [http://www.hercenter.org] provide an understanding of some of the most common pollution prevention opportunities available and highlight some examples of strategies by waste type.

The *Healthcare Profile* provides pollution prevention information on the following key topics:

- Environmental Management Systems (EMS) and EPA's "Healthcare Guide to Pollution Prevention Implementation through Environmental Management Systems," is a comprehensive resource for understanding and developing an EMS specific to a healthcare facility. This document is available at the EPA Region 2 Compliance Healthcare Web site [http://www.epa.gov/region02/healthcare/].
- Purchasing/Product Substitution/Source Reduction opportunities exist in many areas within healthcare operations. Environmentally preferable purchasing (EPP) can reduce the waste generated at a facility. The Sustainable Hospitals project is, among other things,

Web sites with resource information for source reduction include the **Hospitals for a Healthy Environment** (H2E) site [http://www.h2e-online.org/] and the Sustainable **Hospitals project** site [http://www.sustainablehospitals.org/cgi-bin/DB_Index.cgi]. H2E is designed to help healthcare facilities enhance work place safety, reduce waste and waste disposal costs and become better environmental stewards and neighbors.

designed to support the healthcare industry select products and work practices that reduce occupational and environmental hazards.

- Process changes are intentional modifications of activities that reduce pollution and there are abundant opportunities for this in healthcare operations. Some process changes with environmental benefits also have other benefits, such as cost containment or improved service or product quality. Examples of healthcare process changes include switching to digital imaging for radiology processing (reduces silver waste outputs) and improving waste segregation systems (reduces biohazardous waste outputs, increases the likelihood that wastes can be collected and handled in the most appropriate and cost-effective fashion, separating solid waste outputs and recyclable waste outputs).
- Recycling opportunities are widespread throughout most healthcare facilities. Waste volumes can dramatically be reduced if systems are in place to capture recyclable materials such as cardboard, paper, glass and aluminum beverage containers, scrap metals, wood waste, kitchen grease, and selected plastics. Opportunities also exist for reducing hazardous waste through recycling initiatives.

The treatments chosen to address health issues also can have environmental impacts and less toxic treatments, where appropriate, can prevent pollution. For example, pharmaceutical use of lindane-containing products was banned in California because residues from these products were contaminating drinking water. Because lindane can be toxic to the brain and other parts of the nervous system, the Centers for Disease Control and Food and Drug Administration permit the use of lindane-containing products for treatment of head lice and scabies with caution and only when treatment with safer alternatives has failed.

3.5 TRIBAL GOVERNMENT ENTERPRISES

Tribal government enterprises allow tribes to foster economic development while simultaneously maintaining control over the enterprises' impacts on the environment, natural resources, and tribal cultural values. Tribal enterprises provide much of the financial resources needed to manage day-to-day government operations as well as a full governmental infrastructure. Tribes around the country operate numerous facilities, such as schools, medical facilities, utility departments, businesses, factories, and other revenue producing ventures. Some tribes encourage economic development and have micro-loan organizations that provide assistance to tribal members who have business plans intended to contribute to Indian country's growing self-sustainability. The popularity of the gaming industry has provided the capital necessary to attempt other forms of economic development, and many tribes have been quite successful. Additionally, revenue sharing with non-gaming tribes has provided start-up costs and matching funds for smaller tribes that do not have casinos.

3.5.1 FORESTRY

Many tribal governments with forests on their reservation are responsible for regulating forestry operations and related activities. In other cases, forests are the responsibility of tribal members, non-tribal members, and the federal land management agencies, including the U.S. Forest Service (Department of Agriculture) and the Bureau of Land Management and the National Park Service (Department of the Interior). Regardless of regulatory responsibility, forests often contain areas of spiritual or religious value, medicinal or ceremonial plants, archaeological sites, and areas of traditional hunting, fishing and gathering use, as well as areas of scenic and aesthetic value.

Where tribes are responsible for regulating forest uses, tribes can meet their political, spiritual, social, and economic needs concurrently through sustainable forestry management – the use of forests in a way and at a rate that maintains their productivity, biodiversity, regeneration capacity, and potential to fulfill relevant ecological, economic, and social functions. For more information on sustainable forest management, visit the U.S. Forest Service Web site [http://www.fs.fed.us/]. As an economic incentive to encourage sustainable forest management, tribal forestry operations might consider certifying their management practices through one of several independent organizations [http://www.fs.fed.us/sustained/links.html]. A case study on a tribal sustainable forest management program is found at the Forest Stewardship Council's news and media site [http://www.fscus.org/news/?article=155] and an example of sustainable forest management is Menominee Tribal Enterprises "*The Forest Keepers*": The Menominee Forest-Based Sustainable Development Tradition [http://www.epa.gov/ecopage/upland/menominee/forestkeepers.pdf].

For specific information, see "Forestry Production Industry: Operations, Impacts, and Pollution Prevention Opportunities" in *The Profile of the Agricultural Crop Production Industry* at EPA's *Profile of the Agricultural Crop Production Industry* Web site [http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/crop.html].

Forestry activities can contribute to nonpoint source pollution and water quality degradation through erosion, removal of streamside vegetation, destruction of habitat, and the use of pesticides and nutrients, primarily commercial fertilizers. Additional information about these

issues is found in Section 3.7.1, Surface Water Protection and in Section 3.10, Pesticide Management.

3.5.2 GAMING

Gaming is a form of economic development that has provided income for tribes and job growth on certain Indian reservations. Some tribes currently conduct a range of gaming enterprises, including bingo, horse and dog racing, and casinos. The Indian Gaming Regulatory Act of 1988 (IGRA) regulates gaming on Indian reservations. Under IGRA, tribes must have a gaming board that creates rules and regulations, reports to the federal government, and conducts the background checks necessary to make sure the tribe's casino is in compliance with federal standards. Additionally, IGRA provides standards for compacting with state governments for gaming enterprises, and sets the appropriate taxation rates for individual gaming revenue. Finally, the IGRA requires, in part, "the construction and maintenance of the gaming operation, and the operation of that gaming [be] conducted in a manner that adequately protects the environment and the public health and safety."

The IGRA created the National Indian Gaming Commission (NIGC), an independent federal regulatory agency, with responsibility for regulating gaming activities on Indian reservations. Among its other responsibilities, NIGC is authorized to conduct investigations; undertake enforcement actions, including the issuance of notices of violation, assessment of civil fines, and/or issuance of closure orders; conduct background investigations; conduct audits; and review and approve tribal gaming ordinances. IGRA also provides the NIGC the responsibility for overseeing gaming operations conducted by tribes.

> The National Indian Gaming Commision Web Site provides information on gaming activities on Indian lands. See NIGC website at [http://www.nigc.gov/]

Gaming revenues are allocated by tribal governments for many different uses within several major use categories. Many tribes put the revenue back into the tribe's infrastructure and build administration offices, healthcare facilities, housing, and recreation sites. Other tribes distribute gaming revenue to their members directly through a "per capita" allotment process or on an "as needed" basis to members who apply. Gaming revenue proceeds are also used to encourage the development of other tribal business ventures. For some tribes, the proceeds make up a substantial portion of annual tribal revenue.

Gaming enterprises do not typically have any unique potential to impact the environment; instead, gaming operations have the potential to impact the environment in much the same way as other similar buildings – during the building construction phase and through building

operations, including dealing with stormwater and other drainage issues, and air quality impacts associated with motor vehicle traffic and boiler operations. See Section 3.6 (Construction/ Property Management) for common environmental impacts and applicable regulations associated with building construction and operation.

3.5.3 AGRICULTURE

Tribes engage in a wide array of agricultural operations. These operations include raising animals and growing fruits and vegetables for sale, as well as overseeing animal farms, medicinal herb gardens, and the production and collection of rare indigenous flora, such as blue corn and wild rice. The environmental impacts, and relevant regulations, of agricultural operations are the subject of separate EPA Sector Notebooks providing resources and other compliance assistance tools, which can be found at the EPA's Compliance Assistance Agriculture Sector site [http://www.epa.gov/compliance/assistance/sectors/agriculture.html].

> EPA's Compliance Assistance Agriculture Sector site [http://www.epa.gov/compliance/assistance/sectors/agriculture.html] provides information on environmental impacts, relevant regulations, and other compliance assistance tools.

Agricultural operations are subject to the requirements of many federal environmental statues. Under the CWA, there are five program areas that potentially affect agricultural operations, including point source discharges, storm water discharges, nonpoint source pollution, wetland regulation, and sludge management. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) has a significant impact on the day-to-day operations of may agricultural operations. Other relevant statutes pertaining to the agriculture sector include RCRA, CERCLA, EPCRA, CAA, Toxic Substances Control Act (TSCA), and Coastal Zone Management Act (CZMA). Agricultural operations should review the information found in Section 3.6.5 (Underground Storage Tanks), Section 3.6.6. (Aboveground Storage Tanks), Section 3.7 (Water Resource Management) and Section 3.10 (Pesticides) of the *Tribal Profile*. In addition, agriculture operations should review other relevant EPA Sector Notebooks, including *The Profile of the Agricultural Crop Industry*, *The Profile of the Agricultural Livestock Industry*, and *The Profile of the Agriculture Chemical, Pesticide, and Fertilizer Industry*. See Appendix I of the *Tribal Profile.*

The following presents a brief discussion of agricultural pollutants and their environmental impacts:

- ***Nutrients.*** Excess nutrients in water (*i.e.*, phosphorus and nitrogen) can result in or contribute to low levels of dissolved oxygen (anoxia), eutrophication, and toxic algal

blooms. These conditions may be harmful to human health and ecosystems and may adversely affect the suitability of the water for other uses.

- ***Sediment.*** Sediments affect the use of water in many ways. Suspended solids reduce the amount of sunlight available to aquatic plants, cover fish spawning areas and food supplies, clog the filtering capacity of filter feeders, and clog and harm the gills of fish. Turbidity interferes with the feeding habits of fish. These effects combine to reduce fish and plant populations and decrease the overall productivity of waters.

- ***Animal Wastes.*** Animal waste includes the fecal and urinary wastes of livestock and poultry; process water (such as from a milking parlor); and the feed, bedding, litter, and soil with which fecal and urinary matter and process water become intermixed. Manure and wastewater from animal feeding operations have the potential to contribute pollutants such as nutrients (*e.g.*, nitrogen and phosphorus), organic matter, sediments, pathogens, heavy metals, hormones, antibiotics, and ammonia to the environment. Decomposing organic matter (*i.e.*, animal waste) can reduce oxygen levels and cause fish kills.

- ***Salts.*** Salts are a product of the natural weathering process of soil and geologic material. In soils that have poor subsurface drainage, high salt concentrations are created within the root zone where most water extraction occurs. The accumulation of soluble and exchangeable salts (*i.e.*, metal compounds in the soil that can chemically change) leads to soil dispersion (*i.e.*, movement of soil in air and water), structure breakdown, decreased infiltration, and possible toxicity; thus, salts often become a serious problem on irrigated land, both for continued agricultural production and for water quality considerations. High salt concentrations in streams can harm freshwater aquatic plants just as excess soil salinity damages agricultural crops.

- ***Pesticides.*** The primary pollutants from pesticides are the active and inert ingredients, diluents, and any persistent degradation products. Pesticides and their degradation products may enter groundwater and surface water in solution, in emulsion, or bound to soils. Pesticides may, in some instances, cause impairments to the uses of surface waters and groundwater. Some types of pesticides are resistant to degradation and may persist and/or accumulate in aquatic ecosystems. Pesticides may harm the environment by eliminating or reducing populations of desirable organisms, including endangered species. See Section 3.10 (Pesticides) for more information.

3.5.4 TOURISM

Tribes often provide the public the opportunity to visit Indian reservations. Tourist enterprises include indoor recreation facilities – casinos, hotels, spas – and outdoor recreation facilities and activities – ski resorts, golf courses, and expeditions. While there are no potential environmental impacts or regulations that are unique to tourist enterprises, these activities have the potential to impact the environment in similar ways to corresponding non-tourist enterprises. See Section 3.6 (specifically, the subsections on buildings (3.6.3) and outdoor recreation facilities (3.6.5)) for typical environmental impacts and applicable regulations of building construction and property management.

Tribes may want to use EPA's Environmental Enrichment for the Lodging Industry: A Toolkit Web site [http://www.epa.gov/seahome/hotelsnew.html] to improve the day-to-day operation and maintenance of hospitality and food service facilities. The toolkit includes approaches that can save money, improve the quality of guest experiences, and ensure the site's sustainability as an attraction and environmental asset.

3.5.5 FISHERIES AND SHELLFISH

Tribal governments manage fisheries and shellfish resources for economic development, and to support cultural, subsistence, and religious activities. Tribes regulate and coordinate fishery and shellfish management programs within the exterior boundaries of their reservation and within specific adjudicated usual and accustomed fishing and shellfish grounds. In addition to federal and tribal law, tribes with treaties maintain guaranteed rights to harvest fish and shellfish in the places they had traditionally utilized. Some tribes also co-manage fisheries and other natural resources with states. In many instances tribes cooperate with federal, state, private, and public parties to protect, restore, and enhance the productivity and diversity of the ecosystems supporting fisheries and shellfish.

Compliance with applicable federal and tribal environmental laws, as well as effective land, water, fish and shellfish management, is important to species survival and the maintenance of sustainable fisheries and shellfish beds and productive hatchery operations.

3.5.5.1 OPERATIONAL ASPECTS

Tribes often have two types of fishery activities: (1) commercial, and (2) ceremonial and subsistence. Commercial operations are for profit – fish and shellfish are sold to buyers, who in

turn either sell directly to the public or to other commercial entities (*i.e.*, wholesalers, restaurants, other distributors). Tribes collect taxes from tribal members who sell the fish or shellfish and those taxes are returned to the tribal programs to help pay for natural resource management. Ceremonial and subsistence fishing are intended for tribal use only. For many tribes, fish and shellfish have a central role in tribal gatherings (*e.g.*, naming ceremonies, funerals, honoring elders).

Fish hatcheries produce fish for stocking in tribal and non-tribal waters. The stocks are used to rehabilitate declining populations and to provide additional fish for commercial and ceremonial and subsistence uses. Fish hatcheries need a steady source of water to sustain the operation and typically consist of ponds and tanks and tanks and cages of various capacities for hatching and rearing aquatic species. Of course, the design of each hatchery reflects a tribe's priorities, the type of fish being raised, and the fish's life cycles.

The water used to raise fish in hatcheries is returned into the stream or river from which it originated. This "wastewater" discharge, that has been in contact with cultured fish and contains hatchery fish wastes, can create a number of environmental problems. As a discharge to navigable waters of the United States, CWA NPDES permits are required generally with EPA or tribes issuing permits for discharges in Indian country and states generally issuing permits for discharges outside Indian country. EPA's NPDES program Web site [http://cfpub.epa.gov/npdes/] provides information concerning NPDES permits.

Hatchery waste products can include: uneaten food, fish carcasses, fish feces, nutrients (especially phosphorus), algae and benthic macrophytes, parasites, disease organisms, drugs and other chemicals. Solid and liquid pollutants are byproducts of raising fish in high densities within a confined facility. Although both fish and their wastes occur naturally in free-flowing systems, the unnaturally high concentrations of such wastes from fish raised in a concentrated setting can pose environmental problems. When flushed into waterways, the solids can settle beneath or downstream of the facility. These solids increase the turbidity and nutrient concentrations in streams and may decrease dissolved oxygen. The rich nutrient concentrations of phosphates and nitrates encourage the explosive growth of algae and benthic macrophytes. The growth of algae and benthic macrophytes changes the habitat and consumes oxygen in the water that other fish and plants need to survive.

Chemicals and pharmaceutical drugs used to treat fish for parasites, as well as other drugs and chemicals used in aquaculture, also flow into downstream waters. The use of settling ponds greatly reduces or eliminates water quality concerns, and is an integral part of any tribal hatchery operation. Settling ponds are vacuumed before the water is released back into the water body; vacuumed waste is then disposed of in a landfill.

3.5.6 Fuel Management and Gasoline Stations

Tribes are often responsible for fuel management. Fuels managed include: gasoline, diesel fuel, fuel oil, and, in some cases heavier grades of oils. Fuel management operations include tank and pipeline management, management of runoff and environmental controls, and management of tank filling and refueling operations. Some of the wastes commonly generated in fueling operations, include tank bottom water, tank bottom sludges, spent solvents, and waste petroleum products.

Both aboveground and underground storage tanks (AST and UST) are found at tank farms. Tanks typically are constructed of steel or fiberglass-reinforced plastic.

One of the major concerns of fuel management is associated with runoff from rainwater and other environmental controls. Care should be taken in the design of fuel management areas to minimize the potential that runoff from "dirty" areas (those areas where fuel is managed) will make its way to areas where fuel is not managed. Clean runoff is discharged directly to stormwater systems. Runoff from fuel management areas generally should be discharged to treatment units, where fuel and other contaminants can be removed before the runoff is discharged to the storm water system. The treatment units may be as simple as gravity-based oil-water separators, or they may be extensive treatment systems designed to salvage the fuel for reuse. Increasingly, environmental controls are being installed to treat other wastes generated from tank farm operations, such as tank bottoms.

Detailed information on USTs and ASTs, including the applicable federal regulations and pollution prevention opportunities is found at Sections 3.6.5 and 3.6.6.

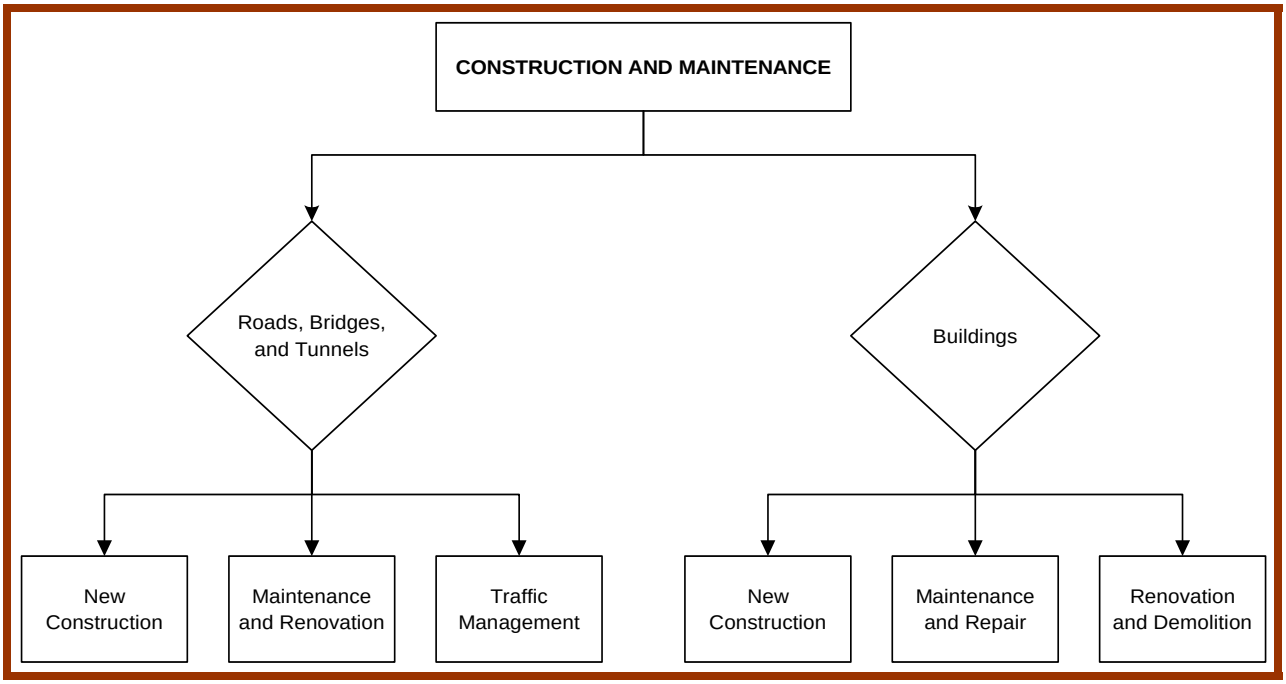
3.6 Construction/Property Management

Tribal governments may be responsible for constructing and maintaining roads, buildings, bridges, tunnels, treatment plants, and landfills, as well as for renovating and demolishing buildings. Construction and maintenance activities, which typically involve planning, coordination, and oversight by the tribal government, are essential to the infrastructure for transportation, administration, public services and housing. See Exhibit 3-2. Because many roadways, waterways and easements cross from

> EPA's Compliance Assistance Construction Sector Web site [http://www.epa.gov/compliance/assistance/sectors/construction.html] provides up-to-date information on the **construction sector**. Appendix G and H of this *Profile* provide information on green building cost savings and successes.

reservation land to federal, state, and local land, tribes have also entered into intergovernmental agreements that allocate responsibility for construction and maintenance.

Exhibit 3-2. Construction and Maintenance



3.6.1 FUNDAMENTAL ENVIRONMENTAL ISSUES OF CONSTRUCTION MANAGEMENT

It is important for tribes to engage in a dialogue with all parties involved in a construction project to ensure that the applicable environmental requirements are met. EPA's *Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development* (MYER Guide) [http://www.epa.gov/compliance/resources/publications/assistance/sectors/constructmyer.html] provides a list of questions to help owners and contractors assign who is responsible for ensuring compliance with federal environmental regulations. The MYER Guide also contains self-audit checklists that will help tribes and construction companies evaluate their compliance status once a project is commenced. Finally, the MYER Guide can be used to facilitate compliance at the pre-bid, pre-construction, and construction phases of a project.

Key issues discussed in the MYER Guide are:

- Stormwater permits;
- Dredge and fill wetlands (CWA Section 404) permit requirements;
- Oil spill prevention requirements;
- Hazardous and non-hazardous solid waste requirements;

- Hazardous substances (Superfund liability) requirements;
- Polychlorinated Biphenyl (PCB) waste requirements;
- Air quality requirements;
- Asbestos requirements; and
- Endangered Species Act (ESA) requirements.

When planning and designing a construction project, tribes should consider applying "green design" principles and apply an environmental management system (EMS). That is, the tribal government should evaluate the environmental aspects and impacts of the project and establish procedures to minimize the impacts. EPA's EMS Web site [http://www.epa.gov/ems/index.htm] provides comprehensive information about processes and practices. Green design resources are available at EPA's Green Building Web site [http://www.epa.gov/greenbuilding/], the Homes Across America Web site [http://www.homes-across-america.org/], and the U.S. Green Building Council Web site [http://www.usgbc.org/].

In many cases, tribal governments hire contractors to assist or manage some operations, such as construction operations, tank monitoring or well sampling, solid waste disposal, or vehicle maintenance. Tribal governments should include reporting or monitoring methods directly in contract agreements to ensure that contractor operations comply with all federal and tribal regulations.

It is important to note that administrative activities can also affect the severity of environmental impacts, as well as the relevant regulatory burdens, related to the construction and maintenance of tribal government facilities and housing units.

3.6.1.1 LAND USE PLANNING AND ZONING

Tribal governments use land use planning and community development planning to determine the uses of their land. Once a tribe makes a zoning decision the land cannot be used for another purpose unless it is first rezoned by the tribal government.

Land use planning and zoning activities do not themselves create environmental effects. Rather, it is the results of these activities - the actual land use - that cause environmental impacts. Land use choices often determine whether natural resources are enhanced, conserved or depleted. Land used for residential, commercial, or industrial purposes can affect air, land, and water resources. Of course, abandoned sites that are restored can revitalize an area and reduce environmental risks as the site is cleaned up. By carefully considering the environmental impacts prior to making zoning decisions, the tribal government can either prepare for the impact of those decisions (*i.e.*, concurrently construct stormwater catch basins while allowing

construction of a new parking lot) or make adjustments to ensure adequate protections are in place.

3.6.1.2 National Environmental Planning Act Process and Inter-governmental Coordination

> **EPA's National Environmental Policy Act** Web site [http://www.epa.gov/Compliance/nepa/index.html] has information on **NEPA**, including definitions, information on impact statements, and details on how the EPA complies with NEPA.

Tribal governments may also directly coordinate their efforts with EPA and other federal agencies in order to comply with federal statutes and regulations. When federal dollars are used to build on tribal trust lands or a federal permit is required for the project, the federal agency providing the funds or permit may need to assess the potential environmental impacts of the proposed project under the National Environmental Policy Act (NEPA). Using the agency's NEPA implementing regulations, the responsible federal agency generally may ask the tribe to cooperate in this process and, if more than one agency is providing the funds or another agency needs to issue a permit, the other agencies may also be asked to cooperate with the NEPA assessment process. An environmental impact statement may be required in order to assess project impacts that significantly affect the quality of the human environment.

The NEPA assessment, which may be necessary when a tribal government's construction project uses federal funds or requires a federal permit, may involve such issues as water quality or quantity, wetlands, air quality, land use, threatened or endangered species, potential impacts to sacred sites and items of cultural patrimony, and traditional hunting, fishing, and gathering rights. The NEPA process includes consideration of the applicability of other environmental laws and federal executive orders so that, as appropriate, they are incorporated into the NEPA review process as early as possible. Examples of applicable laws may include the ESA, the National Historic Preservation Act (NHPA), and the National Native American Graves Protection and Repatriation Act (NGPRA).

For certain construction projects, impacts on receiving waters may be regulated under the CWA and may require the tribal government to obtain a permit for certain discharges which may include controls on discharge quantities or other control measures, including stormwater runoff controls. Air and noise impacts may be regulated under the CAA. The above impacts may also be regulated by tribal laws.

In the case of land use, tribes are generally exempt from state and local regulatory authority for lands owned in trust. However, tribes often make efforts to meet with the planning and zoning boards of surrounding state and local jurisdictions. This enables tribal planners to ensure that the

tribe will meet its needs, while simultaneously taking into account the objectives of the surrounding jurisdictions. Tribal government coordination with state and local governments may also be necessary if construction and maintenance activities affect their respective interests and responsibilities.

3.6.2 STORMWATER – APPLICATION TO CONSTRUCTION ACTIVITIES

Stormwater runoff from construction activities can significantly impact water quality. As stormwater flows over a construction site, it picks up sediment, debris, chemicals, and other pollutants. Polluted stormwater runoff can harm or kill fish and other wildlife and impact drinking water sources. Sedimentation can destroy aquatic habitat and high volumes of runoff can cause stream bank erosion.

EPA's Stormwater Discharge for Construction Activities Web site http://Epa.gov/npdes/stormwater/const has more information to address construction issues.

The NPDES Stormwater program requires operators of construction sites one acre or larger (including smaller sites that are part of a larger common plan of development) to obtain authorization to discharge stormwater under a NPDES construction stormwater permit. Tribal governments must apply for a construction stormwater permit if they meet either of the two parts of the stormwater regulation definition of "operator." This means a tribal government should apply for permit coverage if the tribal government has operational control over either:

- The construction plans and specifications, including the ability to make modifications to those plans and specifications (*e.g.*, owner or developer of project); or
- Day-to-day operational control of those activities at a project which are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other permit conditions (*e.g.*, general contractor).

The development and implementation of stormwater pollution prevention plans is the focus of NPDES stormwater permits for regulated construction activities.

EPA remains the permitting authority for most land in Indian country. For construction (and other land disturbing activities) in areas where EPA is the permitting authority, operators must meet the applicable requirements of the national EPA Construction General Permit (CGP); tribes in EPA Region 4 are covered by a region-specific construction permit. The CGP outlines a set of provisions construction operators must follow in order to comply with the applicable

requirements of the NPDES stormwater regulations. The CGP covers any site one acre and above, including smaller sites that are part of a larger common plan of development or sale, and replaces and updates previous EPA permits. Tribes with questions about stormwater requirements or permits may contact the Notice of Intent Processing Center at (866) 352-7755 for questions about filing by mail. Easy and fast online filing is available at the NPDES Electronic Stormwater Notice of Intent (eNOI) Web site [http://cfpub.epa.gov/npdes/stormwater/enoi.cfm].

3.6.3 BUILDINGS AND CONSTRUCTION

Tribal government activities related to buildings include constructing new schools, public housing, administrative facilities, and other government buildings, maintaining and repairing those buildings, renovating old buildings, and demolishing unusable buildings. Because these activities could affect the environment, they may be subject to environmental laws and regulations, as indicated in the following list:

> The **Construction Industry Compliance Assistance Center** Web site [http://www.cicacenter.org/] provides plain language explanations of environmental rules for the construction industry.

- New construction – CWA, ESA, Rivers and Harbors Act, CAA, and NEPA
- Maintenance and repair – CWA, RCRA, CAA, EPCRA, CERCLA, TSCA, FIFRA, and the Safe Drinking Water Act (SDWA)
- Renovation and demolition – RCRA, CAA, and TSCA

See, Appendix H for information on the Economic Benefits of Building Green and Appendix G for Pollution Prevention Success Stories.

3.6.3.1 NEW CONSTRUCTION

The construction of new buildings involves several activities, including clearing land, building the structure, and disposing of construction materials.

Clearing Land for Construction. Clearing land entails the removal of vegetation and existing structures to prepare a site for construction. Clearing land can impact the environment by:

- Making it more susceptible to erosion, landslides, or floods;
- Harming aquatic resources (particularly wetlands) and endangered species; and
- Increasing the flow to storm sewer systems, leading to increased potential for downstream flooding and increased stream bank erosion in receiving waters.

Stormwater runoff (which may contain sediment and construction waste) from new building construction has the potential to contaminate surface waters and must be controlled under the requirements of the NPDES stormwater program. Generally, most of the waste generated through building construction activities is non-hazardous solid waste. The disposal of these wastes may be regulated under a variety of federal and tribal laws. Hazardous construction wastes are regulated under the federal RCRA hazardous waste regulations.

Additional impacts of construction activities include dust and odors from construction traffic, air emissions, noise, and vibrations from construction equipment.

New construction may directly affect wetlands if fill material is dumped in them. Sediment from construction sites may also negatively affect the hydrologic capacity of wetlands. Wetland losses may increase downstream flooding and may impact a wide variety of aquatic and upland species. If new construction could potentially impact aquatic areas, such as wetlands, tribal governments may need to obtain a permit before beginning a construction project. The U.S. Army Corps of Engineers (Corps) regulates any dredging and general construction in, over, and under navigable waters of the United States, under Section 10 of the Rivers and Harbors Act. The Corps also regulates the discharge of dredged and fill material into waters of the United States, which include wetlands. The discharge of dredge and fill material into wetlands is regulated under Section 404 of the CWA and may require a permit. In addition, controlling construction site discharges (particularly stormwater runoff) is regulated under the stormwater provisions of EPA's NPDES permitting program, as well as local erosion and sediment control programs.

EPA's Wetlands Web site [http://epa.gov/wetlands] contains information to protect wetlands and ensure compliance with federal laws.

Endangered Species Act

The ESA provides protection for federally listed, threatened, and endangered species of plants, animals, and their habitats.

Tribal governments may need to directly coordinate construction issues with EPA and other federal

Endangered species are plants and animals that, without special protection and management, are in danger of becoming extinct. Threatened species are likely to become endangered in the foreseeable future. Additional information on endangered species is available from the U.S. Fish and Wildlife Service Endangered Species Web site [http://www.fws.gov/endangered/].

agencies in order to comply with federal statutes and regulations, including ESA and NEPA. Section 3.6.1.2 contains information on inter-governmental coordination issues.

Construction Waste Disposal

Most of the waste generated through construction activities is non-hazardous solid waste. Typical wastes generated at construction sites include concrete, steel, wood, rubber, asphalt, soil, and organic matter (*i.e.*, tree stumps). The disposal of these wastes may be regulated under a variety of federal and tribal laws. Hazardous construction wastes are regulated under the federal RCRA hazardous waste regulations. Some tribal governments have regulations regarding the disposal of non-hazardous construction and demolition debris at special construction waste landfills. These tribes may allow debris, such as uncontaminated concrete and asphalt, to be used as fill material.

Much non-hazardous construction and demolition materials from new construction (as well as renovation of roads, bridges, and buildings) can be recovered and recycled. EPA's Construction and Demolition (C&D) Debris Web site [http://www.epa.gov/epaoswer/non-hw/debris-new/index.htm] provides more information. Also see Appendix E for additional resources.

3.6.3.2 Operations, Maintenance and Repair

Tribal governments may be responsible for activities related to the operation, maintenance, and repair of buildings, including addressing indoor air quality issues, operating boilers and cooling systems, applying pesticides.

Indoor Air Quality–Lead Paint

> EPA's Lead Awareness Program Web site [http://www.epa.gov/lead/] is a comprehensive source of information on **EPA's Lead in Paint, Dust, and Soil Program**. It includes educational materials and a toll-free hotline.

The use of lead-based paint was banned in 1978; however, lead-based paint is still found in many older buildings and homes. When doors and windows are opened and closed, or painted stairs are walked upon, small amounts of lead paint dust can be released and then settle on room surfaces. Young children are particurly susceptible to the health effects of lead poisioning and pregnant women poisoned by lead can transfer lead to a developing fetus, resulting in adverse developmental effects. Since dust is continually released, damp mopping and dusting can help reduce dust accumulation and facilitate removal. Doors, windows, stairs, and other surfaces with lead-based paint that chip create more obvious problems. Vacuuming an area can remove lead-based paint chips but can also distribute lead dust unless a high efficiency

particle accumulator (HEPA) vacuum is used. Lead dust may also be present in the soil around buildings or houses. Routine maintenance of buildings and homes – painting, plumbing or electrical work, or heating duct work, and carpet removal – can also disrupt surfaces painted with lead-based paint. While ground covering can minimize the disruption of the dust, doormats should be provided to wipe the dust in soil from shoes. These are "interim controls" that tribal governments can use to help reduce exposures to lead dust.

A number of options exist for tribal governments to address lead-based paint issues. Tribal governments can replace windows, doors, or other surfaces painted with lead-based paint. During maintenance, fugitive dust can be reduced and contained by covering the area with polyethylene plastic sheeting and properly disposing of the sheeting after the work is completed. In addition, the work area should be kept wet or moist to reduce dust. Of course, workers and residents should be notified prior to any work in lead paint areas. Notification will allow residents to stay away from the building while work is conducted. Workers should wear proper personal protective equipment while conducting the work. Lead paint abatement must be conducted by persons trained and certified, and they must follow the specific work practice standards specified in TSCA 402 rules (40 CFR Section 745.227).

Prior to conducting remodeling or renovation in a building with lead paint, tribal governments should review the EPA brochure entitled *Reducing Lead Hazards When Remodeling Your Home* (EPA-747-K-91-007), available through the National Lead Information Center ((800) 424-LEAD/5323) and also online from EPA's Office of Pollution Prevention and Toxics [http://www.epa.gov/lead/pubs/rrpamph.pdf]. See section 3.6.3.3 for additional information on lead paint.

Indoor Air Quality – Mold

Exposure to mold can cause a variety of health effects and symptoms, including allergies. The key to mold control is moisture control. Fix sources of moisture problems and maintain indoor humidity below 60% relative humidity, ideally 30 to 50%. Mold problems can be hidden behind walls or in air ducts. Mold may require remediation. EPA's Indoor Air Mold Web site [http://www.epa.gov/mold] provides useful information on mold growth and cleanup options.

Indoor Air Quality – Radon

Over the past 40 to 50 years, exposure to indoor air pollutants (*i.e.*, radon) has increased, in part because of the construction of more tightly sealed buildings, the reduction in ventilation rates

EPA's **A Citizen's Guide to Radon** Web site [http://www.epa.gov/iaq/radon/pubs/citguide.html] contains information on testing, effects, and links to more sources.

(intended to save energy), the use of synthetic building materials and furnishings, and the use of chemically formulated personal care products, pesticides, and housekeeping supplies. Common effects of indoor air quality problems on occupants include headache, fatigue, shortness of breath, sinus congestion, coughing and sneezing, eye, nose, throat, and skin irritation, dizziness, and nausea.

Radon is one particular indoor air pollutant of concern associated with this issue. Radon levels can vary from structure to structure. The average indoor radon level is estimated to be about 1.3 picocuries per liter (pCi/L), and about 0.4 pCi/L of radon is normally detected in the outside air. The United States Congress has set a long-term goal for indoor radon levels to be no more than outdoor levels. While this goal is not yet technologically achievable in all cases, levels in most structures today can be reduced to no more than 2 pCi/L. EPA recommends followup radon testing or mitigation in buildings with levels of 4 or more pCi/L.

The federal government, as well as most tribal governments, do not have regulations or established enforcement capabilities regarding indoor air quality in buildings, including schools. Accordingly, at this time, tribal governments are not required to enforce any federal standards for acceptable radon levels in commercial or residential buildings, including schools. However, tribes may pass regulations recommending radon mitigation to owners of buildings. Additionally, for some schools, financial or technical assistance may be available from EPA, BIA, and OSHA.

Boiler Operations

Tribal governments operate boilers to produce steam or electricity to heat government buildings or other buildings on the reservation, including casinos. Boiler operations include storing fuels and boiler chemicals, operating the boiler, maintaining the boiler, and disposing of residuals from fuel burning. Storing fuels and chemicals can affect the environment through spills that have the potential to reach groundwater or surface waters. Operating boilers may impact the environment through air emissions from fuel burning. Coal ash from fuel burning can contaminate waterways if it contains heavy metals or other toxics and is not disposed of in a manner that prevents it from coming in contact with waterways or rain water.

The storage of liquid boiler fuel (*e.g.*, heating oil) may be regulated under the Spill Prevention, Control, and Countermeasures (SPCC) program of the CWA, which requires the preparation and implementation of SPCC Plans to ensure that containment and other countermeasures are in place to prevent oil spills that could reach navigable waters. In this context, SPPC Plans are required for facilities with an aggregate aboveground storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons. The storage of chemicals may be regulated under EPCRA or Section 112(r) of the CAA (risk management plans), which

requires the development of emergency plans and reporting based on the quantity of chemicals stored. See Section 3.10.3.1.

Coal combustion byproducts (CCBs) may be either disposed of or put to beneficial use. When considered as a waste, CCBs are exempt from federal regulation as hazardous waste. For more information, see EPA's Fossil Fuels Combustion Waste page of the Special Wastes site [http://epa.gov/epaoswer/other/fossil/index.htm]. Significant environmental benefits may be derived from the beneficial use of CCBs, particularly in the use of coal fly ash as a substitute for cement in the manufacture of concrere. There are many other beneficial uses for coal combustion products, including wallboard, road base, embankments, flowable fill, structural fill, snow and ice removal, and paint. EPA's Coal Combustion Products Partnership Web site [http://www.epa.gov/c2p2/] provides more information. Air emissions from the boiler may be regulated under the CAA, which may require the tribal government to obtain a permit and meet emissions standards depending on the heat output of the boiler and date of boiler construction.

Cooling Systems

Tribal governments operate cooling systems to maintain temperature and to store food in government buildings. Cooling systems contain refrigerants, such as chlorofluorocarbons (CFCs) or ammonia. If released, CFCs harm the environment by depleting the stratospheric ozone layer. The CAA requires maintenance of cooling systems to be conducted by certified personnel who are using certified equipment and following specified guidelines for reclaiming CFCs. The storage and use of ammonia may require reporting under EPCRA or CAA Section 112(r).

Landscaping

With proper design, landscapes can add value to the local environment. During the design phase, careful consideration should be given to plant selection. For example, native plants can reduce the need for extensive pesticides and watering because they are locally adjusted to the pests and climactic conditions of the region. Landscaping during construction can reduce polluted runoff from construction sites. By installing vegetative buffers along water bodies and seeding dirt piles, construction runoff into lakes and streams is greatly reduced. Proper maintenance calls for reduced levels of pesticides and fertilizers and appropriate irrigation. Toxic quantities of chemicals from pesticides and fertilizers can seep into groundwater and leaching into waterways. Overuse of these chemicals is often complicated by over watering. Best management practices should be consulted for proper application of pesticides and fertilizers and strategies for efficient water use. EPA's GreenScapes Web site [http://www.epa.gov/epaoswer/non-hw/green/] provides more information.

Pesticide Applications

Building maintenance may entail the application of pesticides to eliminate unwanted pests, such as insects, rodents, and weeds. Frequently used pesticides include herbicides, insecticides, fungicides, and rodenticides. Pesticides are also used in landscaping for aesthetic purposes. Improper pesticide application can harm human health, causing respiratory and skin infections, and even death. In addition, improper pesticide application can destroy flora and fauna, and contaminate groundwater and surface water supplies through infiltration and runoff. Section 3.10 describes pesticide management activities.

3.6.3.3 Renovation and Demolition

The renovation and demolition of buildings can impact the environment as materials trapped within the building structure are released to the environment. For example, the removal and disposal of asbestos and lead paint can significantly affect both human health and the environment. Renovation and demolition can also produce a large and varied waste stream – Construction and Demolition (C&D) debris – that includes concrete, asphalt, wood, drywall (sheetrock, gypsum, or plaster), and asphalt shingles. C&D debris is also generated during construction of roads and other public works projects.

Asbestos

Buildings owned by tribal governments may contain asbestos or asbestos-containing materials (ACM). Buildings constructed in the 1960s are more likely to have asbestos-containing sprayed- or troweled-on friable (asbestos that can be reduced to dust by hand pressure) materials than other buildings. EPA banned the use of asbestos-containing materials in the 1970s.

> Go to the EPA's **asbestos** Web site [http://www.epa.gov/asbestos/] provides more information and links to other useful sites.

Used for insulation and as a fire retardant, asbestos and ACMs are still found in a variety of building construction materials, including pipe and furnace insulation materials, asbestos shingles, millboard, textured painted and other coating materials, and floor tiles. When undamaged asbestos is encapsulated (sealed with coating materials), asbestos fibers do not adversely affect impact human health or the environment. During renovation or demolition,

however, asbestos fibers may be released. If inhaled or ingested, these fibers can cause respiratory damage.

Asbestos is recognized as a major environmental/public health concern to schools. If a tribal government owns or operates a school building constructed or insulated with asbestos, particularly if renovations or demolitions occur that release fibers, then indoor air quality can be impaired and people can suffer severe respiratory and other health problems.

Under the Asbestos Hazard Emergency Response Act (AHERA), EPA established a comprehensive regulatory framework, within which tribal governments would inspect, manage, plan, and conduct operations and maintenance (O&M) activities and appropriate abatement responses, in order to control ACM in schools. This framework also applies to BIA and other school operators.

Some tribal governments are in the process of developing comprehensive asbestos management/ control programs and/or abatement contractor certification programs. In addition, EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) for asbestos regulates asbestos emissions during building demolition or renovation and the transport and disposal of asbestos waste. School building owners – tribes, BIA, and others – are supposed to inspect school buildings for friable and nonfriable asbestos materials. Inspection activities include reviewing building records, inspecting and sampling materials, and mapping the locations of confirmed or suspected asbestos.

Lead-Based Paint

Lead-based paint is typically found on the interiors and exteriors of buildings constructed prior to 1978. During renovation and demolition, paint removal has the potential to impact human health and the environment as fibers, dust, and paint chips are released. Paint chips and dust can cause indoor air contamination during renovation, and soil contamination from demolition or improper disposal. Assessment of lead-based paint hazards and removal of lead-based paint is regulated under TSCA. Disposal of building materials contaminated by lead-based paint is regulated under RCRA.

Demolition of buildings can cause significant levels of fugitive lead dust emissions. It is therefore very important to control and minimize airborne lead dust during building demolition. Suggestions on reducing lead hazards from demolition activities can be found in the EPA brochure entitled *Reducing Lead Hazards When Remodeling Your Home*, available through the National Lead Information Center at (800) 424-LEAD/5323. Tribal governments should contact EPA to discuss how to dispose of lead wastes, such as painted wallboard, doors and doorframes, windows, and similar materials.

Tribal governments that are uncertain about lead hazards in tribal houses or buildings, including decommissioned military housing, should contact the Office of Lead Hazard Control in the Department of Housing and Urban Development (HUD) at 888-LEADLIST ((888) 532-3547). HUD can provide tribal governments with a list of trained lead inspectors who can help determine the presence and extent of lead.

Construction and Demolition Debris

Municipal solid waste landfills are subject to EPA landfill criteria, while tribal governments mostly regulate C&D landfills. EPA's RCRA regulations (*i.e.*, the Conditionally Exempt Small Quantity Generators Rule (CESQGs), June 1996), however, do prohibit hazardous waste from being dumped in C&D landfills unless those landfills meet certain standards. As indicated above, building materials containing lead and asbestos are also regulated by EPA.

> The **Construction Industry Compliance Assistance Center** Web site [http://www.cicacenter.org/] provides plain language explanations of environmental rules for the construction industry. EPA's RCRA in Focus: Construction, Demolition, and Renovation [http://www.epa.gov/epaoswer/hazwaste/id/infocus/rif-c&d.pdf] provides information on RCRA and construction, demolition, renovation and the solid and hazardous waste regulations that may apply.

C&D debris is not federally regulated, except to the extent that solid waste landfills must follow a few basic standards outlined in RCRA Subtitle D and 40 CFR Part 257. Tribes, therefore, have the primary role in defining and regulating the management of C&D debris in Indian country. Depending on a tribe's specific definition, C&D debris can include the following discarded materials:

- Concrete, cinder blocks, drywall (sheetrock gypsum, or plaster), masonry, asphalt and wood shingles, slate, and plaster;
- Forming and framing lumber;
- Steel, stainless steel, pipes, rebar, flashing, aluminum, copper, and brass, residential and commercial steel framing, structural steel, steel utility poles;
- Brick and decorative blocks;
- Siding;

- Doors and windows;
- Plumbing fixtures;
- Electrical wiring;
- Non-asbestos insulation; and
- Wood, sawdust, brush, trees, stumps, earth, fill, and rock and granular materials.

Much non-hazardous construction and demolition materials can be recovered and recycled. EPA's C&D Debris Web site [http://www.epa.gov/epaoswer/non-hw/debris-new/index.htm] provides more information. Also see Appendix E for additional resources.

C&D debris that meets the legal definition of hazardous waste is required to be treated and/or disposed of in a manner consistent with the federal requirements for hazardous waste and any other tribal waste requirements. Examples of hazardous waste in C&D debris wastes can include:

- Waste paints, varnish, solvents, sealers, thinners, resins, roofing cement, adhesives, machinery lubricants, and caulk;
- Drums and containers that once contained the items listed above;
- Treated wood, including lumber, posts, ties, or decks, and utility poles;
- Asbestos-containing items, such as certain older types of floor tile, insulation, or other materials containing asbestos;
- Lead-based paint, or lead flashing or solder;
- Products containing mercury; and
- Other items that have inseparable hazardous constituents.

Most construction, demolition, and renovation companies – regardless of ownership – are considered CESQGs. CESQGs must comply with three basic federal waste management requirements to remain exempt from the full hazardous waste regulations that apply to generators of larger quantities of hazardous waste (Small Quantity Generators (SQGs) and LQGs)):

- Identify all hazardous waste generated on site. The relevant test procedures are described in an EPA document, Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846 [http://www.epa.gov/sw-846/sw846.htm]. Tribal environmental departments can also use their knowledge of the waste to identify hazardous waste; for example, you might know that the spent solvent you are disposing of is an ignitable hazardous waste, and therefore, you would not have to test for the solvent's flashpoint.
- Do not store more than 2,200 lbs (1,000 kg) of hazardous waste on site at any time.
- Ensure delivery of your hazardous waste to an offsite treatment or disposal facility that is:

- A federally regulated hazardous waste management treatment, storage, or disposal facility.
- A facility permitted, licensed, or registered by EPA or a state to manage municipal or industrial solid waste.
- A facility that uses, reuses, or legitimately recycles the waste (or treats the waste prior to use, reuse, or recycling). A "universal waste" handler or destination facility is subject to the universal waste requirements of 40 CFR Part 273. (Universal wastes include certain batteries, recalled and collected pesticides, mercury-containing thermostats, and mercury-containing fluorescent bulbs).

Note that tribes can seek to require CESQGs to obtain an EPA identification number and comply with certain storage standards. For more information refer to EPA's 40 CFR Parts 260 to 279 Web site [http://www.epa.gov/epaoswer/hazwaste/sqg/cesqg.htm].

3.6.4 ROADS/BRIDGES/TUNNELS

Tribal government activities related to roads, bridges, and tunnels include planning new construction, maintenance of existing infrastructure, and traffic management. Because these activities could affect the environment, they may be subject to federal environmental laws and regulations, as indicated in the following non-exhaustive list:

- New construction – CWA, ESA, Rivers and Harbors Act, CAA, NEPA, RCRA, NAGPRA, NHPA, Marine Mammals Protection Act (MMPA), and the Migratory Bird Treaty Act (MBTA), among other statutes;
- Maintenance and renovation – RCRA, CAA, and CWA; and
- Traffic maintenance and roads – CAA and CWA, including the general nonpoint stormwater runoff provisions.

Tribal governments should also be aware of the potentially applicable federal laws designed to protect worker health and safety, including the Occupational Safety and Health Act. These laws, including the Occupational Safety and Health Act, are implemented by the Occupational Safety and Health Administration (OSHA), within the Department of Health and Human Services. See www.OSHA.gov.

3.6.4.1 NEW CONSTRUCTION

Construction of new roads, bridges, or tunnels generally involves clearing land, constructing the new structure, and disposing of construction waste. The impacts and regulations of these activities are similar to those discussed previously in Section 3.6.3 for buildings.

3.6.4.2 MAINTENANCE AND RENOVATION

Maintenance and renovation of roads, bridges, or tunnels may include street sweeping, snow removal, removal and disposal of lead-based paint, and maintenance of storm sewers. Aspects of these activities may be regulated under the CAA, CWA, RCRA, and tribal solid waste disposal requirements.

Street Sweeping

Tribal governments may sweep streets or require others to do so as a condition of a contract, permit, or intergovernmental agreement. Street sweeping involves using mechanical sweepers to remove dirt, grit, and solids from road surfaces. Street sweeping reduces the concentration of pollutants in stormwater runoff and improves street appearance.

Maintenance of Storm Sewers

Tribal governments may be required to maintain storm sewers as a condition in a contract, permit or intergovernmental agreement. Maintenance of storm sewers may include catch basin cleaning, litter removal from storm channels, and maintenance of stormwater detention facilities. Catch basin cleaning and litter removal from channels protect against street flooding and remove potential pollutants from stormwater. Stormwater detention facilities and other pollutant removal structures, such as sand filters and oil and grit separators, also require frequent maintenance. Disposal of materials generated during cleaning may be regulated under tribal solid waste disposal requirements.

Snow Removal

To maintain road safety in the winter, tribal governments may apply salt and abrasives (*e.g.*, sand) and remove snow. Heavy applications of salts and abrasives may be necessary at busy intersections and steep hills. These activities can degrade water quality by increasing sedimentation and salinity in surrounding water bodies. If applied frequently or improperly, salt may leach into the groundwater and contaminate drinking water supplies.

To prevent such contamination, snow removal activities may be regulated under a tribal law. The code may require designation of sensitive areas (*i.e.*, near public water supply facilities or locations with high levels of groundwater recharge) where pollution prevention practices must be followed. Some of these practices include prohibiting the dumping of heavily treated snow

directly into water bodies or in or around drinking water supplies or landfills, proper operation of salt storage facilities to reduce potential salt-contaminated runoff, and use of alternative de-icing materials (*i.e.*, calcium magnesium acetate).

Removal and Disposal of Lead-Based Paint

Lead-based paint is typically removed from bridges by sandblasting or abrasive blasting prior to refurbishing and repainting. Sandblasting/abrasive blasting removes the existing paint with high velocity sand or synthetic particles. This process could contaminate the air with lead dust, and soil and water during disposal or spills of lead-contaminated sand/abrasive and paint chips. Where possible, blasting should take place in such a way as to contain and or prevent releases of lead-contaminated materials to the environment. RCRA and TSCA regulate the disposal of materials contaminated with lead-based paint. Prevention of lead dust releases may be regulated by the CAA. Lead-based paint is also discussed in the context of building operations and repair, Sections 3.6.3 and 3.6.4, respectively.

3.6.4.3 Traffic Management

Traffic management includes designing roads and bridges, access points, and traffic signals, and it affects the environment by impacting motor vehicle emissions. Increased access points to major roads generally lead to more traffic, while new traffic signals often lead to increase emissions from engine idling.

The Federal Highways Administration (FHWA) within the Department of Transportation and the BIA provide information to tribes developing traffic management plans. When developed, each traffic management plan would conform to a CAA Tribal Implementation Plan (TIP) or Federal Implementation Plan (FIP) applicable to the tribe's reservation. The TIP or FIP will account for the air pollution associated with the tribe's traffic management actions.

FHWA's *Transportation Planning Procedures and Guidelines* Web site [http://www.fhwa.dot.gov/flh/reports/indian/intro.htm - toc] provides guidance for tribes and BIA to use when addressing transportation issues and this document meets the intent of the Federal Lands Highways Program (23 USC 204), the Indian Self-Determination and Education Assistance Act, (25 USC. 450), the Roads of the BIA (25 CFR Part 170, and the Indian Reservation Roads Program Stewardship Plan. The document, rather than utilizing predetermined criteria that may

not be applicable to tribal needs, provides a basis for developing goals and strategies that will lead to good decisionmaking.

3.6.5 UNDERGROUND STORAGE TANKS

An underground storage tank (UST) system is a tank, and any underground piping connected to the tank, that has at least 10 percent of its combined volume underground. The federal UST regulations apply only to UST systems storing either petroleum or certain hazardous substances.

> The EPA's Underground Storage Tank (UST) Web site [http://www.epa.gov/oust] provides additional material on **USTs**.

Until the mid-1980s, most USTs were made of bare steel, which is likely to corrode over time and allow UST contents to leak into the environment. Faulty installation or inadequate operating and maintenance procedures also can cause USTs to release their contents into the environment.

The greatest potential hazard from a leaking UST is that petroleum or another hazardous substance can seep into the soil and contaminate groundwater, the source of drinking water for nearly half of all Americans. A leaking UST can present other health and environmental risks, including the potential for fire and explosion.

> EPA's Detecting Releases Web site is found at http://epa.gov/ustsystm/leakdet.htm And SPCC program found at http://epa.gov/oil/spcc.htm.

Subtitle I of RCRA contains technical and financial requirements for USTs storing petroleum or certain hazardous substances. The technical requirements are designed to reduce the chance of releases from USTs, quickly detect releases when they do occur, and cleanup releases promptly. Tribal governments with USTs are required to have:

- Upgraded all USTs to protect against corrosion, spills and overfills;
- Replaced outdated USTs with new USTs that have corrosion, spill and overfill protection; or
- Properly close all USTs by notifying EPA at least 30 days before closure, conducting any necessary site assessment and remedial action, having the tank emptied and cleaned safely, and either removing the tank or leaving it buried but filled with an inactive solid (i.e., sand).

In addition, tribal governments with USTs must demonstrate they are financially capable of cleaning up releases and compensating third parties for resulting damages. See http://epa.gov/swerust1/ustsystm/fineresp.htm

A tribe with a leaking UST is responsible for ensuring that the release is cleaned up, to restore and protect groundwater resources, and to create a safe environment for those who live or work near the site. Cleanup is essential because petroleum releases can contain contaminants like methyl tertiary butyl ether (MTBE) that can make water unsafe or unpleasant to drink. Releases can also result in fire and explosion hazards, as well as cause long-term health effects. Often the specific characteristics of the site (its type of soil, proximity to groundwater) make it a better candidate for a particular type of cleanup method. A contaminated site will need a site characterization (also referred to as a "site assessment") that can help professionals choose the best cleanup method. Professional cleanup contractors base their decisions on site-specific investigations and with local environmental agency approval. In some cases, state or federal regulators take the lead at a contaminated UST site and will make all the cleanup decisions.

For leaking USTs on tribal lands that are not owned by a tribe or that the tribe involuntarily came into possession of, the tribe may be able to receive federal cleanup assistance from EPA. In certain specific cases, EPA may be able to utilize the Leaking Underground Storage Tank Trust Fund for tanks that present a threat to human health and/or the environment. To determine if it is eligible for such assistance, the tribe should contact the EPA Regional underground storage tank people listed in Appendix A.

3.6.6 ABOVEGROUND STORAGE TANKS

EPA's SPCC Web site http://epa.gov/oil/spcc.htm provides comprehensive information on ASTs

Aboveground storage tanks (AST) are tanks or other containers that are above ground, partially buried, bunkered, or in a subterranean vault. Certain oil-containing ASTs need to meet EPA's Spill Prevention, Control, and Countermeasure (SPCC) requirements (40 CFR Part 112). The SPCC rule applies to non-transportation-related onshore and offshore facilities that could reasonably be expected to discharge oil into navigable waters of the United States or adjoining shorelines. It applies to facilities that have an aboveground oil storage capacity of more than 1,320 gallons. At regulated facilities, SPCC applies to all oil containers with a capacity of 55 gallons or greater. The SPCC rule regulates all types of oil, including petroleum oil, animal fats and vegetable oils, and other non-petroleoum oils.

The SPCC rule sets forth requirements for prevention of, preparedness for, and response to oil discharges. To prevent oil from reaching navigable waters of the United States and adjoining shorelines, and to contain discharges of oil, the regulation requires facilities to develop and implement SPCC Plans and establishes procedures, methods, and equipment requirements. A spill contingency plan is required as part of the SPCC Plan if a facility is unable to provide secondary containment (e.g., berms surrounding the oil storage tank). A copy of the entire SPCC Plan must be maintained at the facility if the facility is normally attended for at least four hours

per day. Otherwise, the SPCC Plan must be kept at the nearest field office. The SPCC Plan must be available to EPA for on-site review and inspection during normal working hours.

Each SPCC Plan, while unique to the facility it covers, must include certain elements, as outlined in the rule. To ensure that facilities comply with the spill prevention regulations, EPA regional staff may conduct on-site facility inspections. During an inspection, inspectors may ask to review the SPCC Plan and conduct a walk-through inspection of the facility to ensure that the facility has implemented spill prevention and response measures. In addition, EPA may interview facility personnel on the SPCC Plans and their role in implementing it. Additionally, regulated facilities are required to submit certain information to EPA after experiencing two or more discharges (over 42 gallons) of oil in any 12-month period or a single oil discharge of more than 1,000 gallons. These requirements are in addition to discharge notifications required under other regulations.

Tribes with ASTs should keep in mind that oil-containing ASTs can increase the risk of fire and hazards resulting from damage caused by vehicles or vandals. The SPCC rule contains provisions requiring certain security and safety features to avoid vandalism, accidents involving vehicles, and tank overfills. Tribes may additionally seek to regulate ASTs through a combination of construction, installation, operation, and maintenance requirements that are intended to prevent fires and other hazards that stem from mismanaged or substandard ASTs.

3.6.7 Outdoor Recreation Facilities (Including Stadiums and Golf Courses)

Tribal governments construct and maintain outdoor recreation facilities, including swimming pools, playing fields, and stadiums. Because these activities could affect the environment, they may be subject to environmental laws and regulations, as indicated in the following list:

- New construction – CWA, RCRA, ESA, Rivers and Harbors Act, CAA, NEPA, and NAGPRA, NHPA, MMPA, and the MBTA among other statutes;
- Maintenance and renovation – CWA, RCRA, EPCRA, CERCLA, CAA, TSCA, and FIFRA.

3.6.7.1 New Construction

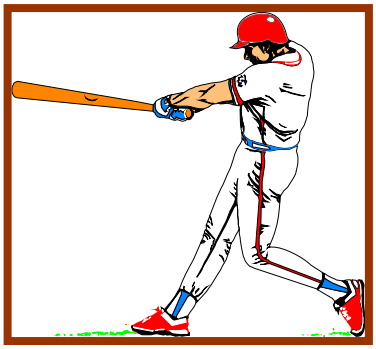
New construction of swimming pools, playing fields, golf courses, and stadiums has many of the same impacts as constructing buildings, roads, bridges, and tunnels. New construction involves

clearing and grading land, landscaping, and building the structure. Section 3.6.4.1 describes these impacts and the associated regulations.

3.6.7.2 Facility Maintenance and Renovation

Facility maintenance and renovation are performed on playing fields and golf courses, stadium buildings (including wastewater treatment plants), and swimming pools.

Playing Field and Golf Course Maintenance



Playing field and golf course maintenance may involve numerous activities, including mowing, irrigating (watering), fertilizing, resodding, applying pesticides, applying biosolids, spreading lime, and maintaining vehicles.

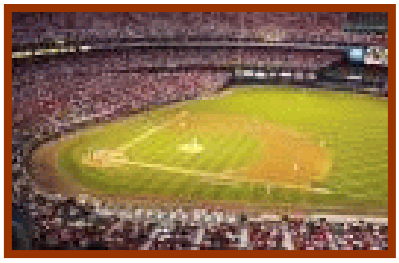
Tribal governments may conduct each of these activities to keep their playing fields in good condition for their designated use. Mowing is typically done by gasoline-powered mowers that can pollute the air with particulates, volatile organic compounds (VOCs), and noise. While mowing activities are generally exempt from EPA regulations, the engines of the mowers themselves are required to meet federal specifications designed to reduce emissions. EPA's first set of emission standards for small engines typically used in lawn and garden applications took effect in 1997. A second set of more stringent emission standards took effect in 2001 and is currently being phased in through 2007. EPA has estimated that these standards will reduce hydrocarbon emissions from these sources by over 70 percent from unregulated levels.

Activities such as irrigating, fertilizing, and applying pesticides and biosolids may affect the environment through spray drift, infiltration, or runoff, which may contaminate local waterways or cause soil erosion. If playing field irrigation leads to a direct discharge (*i.e.*, water is drained to a pipe that leads to a surface water or a stormwater system), the discharge may be regulated under the NPDES program in the CWA. If the discharge drains to a municipal sewer system, the discharge may be regulated under the pretreatment program in the CWA. Tribes that apply biosolids may establish levels of concentration that are acceptable for application. Tribes that fertilize their playing fields and golf courses with biosolids from a municipal wastewater treatment plant must comply with the biosolids management section of the CWA. Pesticide use, including storage and disposal, is regulated under FIFRA. Section 3.9.2.6 provides additional information on regulations concerning the application of biosolids while Section 3.10 provides additional information on pesticides and fertilizers.

Maintaining vehicles and equipment used for playing field and golf course care may be regulated under several environmental laws. Section 3.12 describes these activities in detail, and the applicable laws and regulations.

Maintaining Stadium Buildings

Maintenance of stadium buildings includes many of the activities related to maintenance of other buildings that are described in this section. In addition to operating boilers and cooling systems, maintenance of stadium buildings may include operating a wastewater treatment plant during stadium events; operating a large electrical system that includes capacitors and transformers; storing and using cleaning chemicals; sanding and salting, as well as removing snow from stadium parking lots; and managing non-hazardous waste streams, including food wastes.



Stadiums in Indian country are growing in popularity and may accommodate horse and dog racing, concerts, and sports attractions. Larger stadiums may have their own wastewater treatment plants to accommodate a relatively large number of users during stadium events. Operation of a stadium wastewater treatment plant has the potential to affect the environment (air and water) in the same manner as a municipal wastewater treatment plant, which is described in Section 3.9. Discharges from wastewater treatment plants are regulated under the CWA.

Stadiums that hold evening events often have extensive lighting and public address systems that require capacitors and transformers to assure the necessary electrical current. Stadiums may also have diesel fuel-fired generators for auxiliary power. Capacitors and transformers that contain PCB oils are regulated under TSCA, which may require the labeling of PCB-containing equipment. The storage of oils, as well as spills of PCB oils and oils without PCBs, including diesel fuel, may be regulated under the SPCC provisions of the CWA, depending on the total volume of oil stored at the stadium.

Maintaining stadium parking lots may involve applying salt or sand to lots or removing snow. Each of these activities may be regulated under the CWA. Stadiums use chemicals for cleaning all aspects of the stadium, including restrooms, food service areas, and seating areas. The storage and use of these chemicals may be regulated under the CAA, EPCRA and CERCLA.

Maintaining Swimming Pools

Tribal governments may operate outdoor recreation facilities that include swimming pools. Swimming pool maintenance involves treating pool water through filtration and the addition of chemicals. The use and storage of pool chemicals may be regulated under EPCRA, and the disposal of unused or spilled pool chemicals may be regulated under RCRA. The drainage and disposal of pool water by subsurface infiltration may be regulated under SDWA.

3.6.8 Vehicle and Equipment Maintenance

Tribal governments with vehicles associated with property construction and property management activities should review Section 3.12.

3.6.9 Pollution Prevention in Construction and Maintenance

The Construction Industry Compliance Assistance Web site [http://www.cicacenter.org/] provides information on **pollution prevention in construction and maintenance**.

Tribal governments may be responsible for construction and maintenance activities. Included in this category is the construction and maintenance of roads, bridges and tunnels, the construction, maintenance, renovation and demolition of structures. In some cases, these activities are conducted through contractual arrangements. A simple building/construction cycle includes the following activities:

- Pre-construction;
- Construction; and
- Maintenance and repair.

3.6.9.1 Typical Wastes Generated

Pollution prevention begins long before the first nail is driven. Tribal governments can conduct a baseline analysis of institutional issues that may affect pollution prevention/green building construction and maintenance policy implementation. Areas to examine include procurement policies, zoning, building codes and standards, operations and maintenance policies, and recycling policies. Throughout the construction and maintenance process, opportunities exist for implementing pollution prevention.

Pre-construction activities involve the preparation of a site for future development. During this phase existing vegetation and structures may be removed, creating demolition waste including

asbestos, mercury, PCB, lead based paints, and dust. Other pre-construction impacts include increased potential for storm water runoff and possible negative impacts on aquatic resources and habitat.

Construction activities may involve grading, drilling, and filling. These activities generally do not generate substantial hazardous waste but may result in habitat loss through erosion, sedimentation, and disruption of the natural environment. Building construction and maintenance activities generate wastes from paints, thinners, grease, resins and sealers, glues, cleaners, hydraulic oils, paint remover/stripper, soiled rags, and solder, as well as a host of solid wastes including paper, plastic, scrap lumber, insulation, metals, gypsum, and roofing materials.

Maintenance and repair activities involve the removal and replacement of worn or damaged surfaces, structural members and lubricating or cooling fluids. This could result in the generation of hazardous wastes such as lead based paint or asbestos, cleaning fluids, used lubricating oil, and cooling system fluids.

Construction and Demolition (C&D)

A major opportunity in the C&D industry is the recovery and reuse of materials. C&D recovery and reuse is important because a large fraction of the debris ends up in municipal solid waste landfills or in special C&D landfills, which may have the potential to contaminate groundwater. Also, each year, there is less land available for waste disposal.

Areas to examine include the type of demolition process selected, labor costs, reuse, recycling, contracting constraints, project schedules, material storage space, and marketability of materials. By reducing the amount of C&D debris that is thrown away, tribes also reduce their regulatory burden by avoiding the disposal of items that could be considered hazardous waste.

The key to reducing the amount of C&D debris is to make material recovery a part of the planning and contracting process, and make waste management and recovery plans part of the contractual scope-of-work. Recovery levels could be made an explicit criteria in the awarding of contracts. Prevailing labor rates and local market conditions will need to be considered since labor costs are viewed as the single most important barrier to increasing C&D materials recovery.

A tribe's permit department could consider connecting permit authorization with material recovery efforts. Educational outreach programs, including workshops, Web sites and informational packets, represent another method for encouraging greater participation in C&D material recovery programs.

3.6.9.2 TOP POLLUTION PREVENTION OPPORTUNITIES

- Adopt and implement a policy to encourage the use of green practices in building design, construction, and operation.
- Use "first-in, first-out" materials management.
- Segregate waste streams.
- Reduce risks of spills by controlling access to storage areas and routinely inspecting containers.
- Recycle used cleaning, lubricating, or cooling fluid.
- Use water-based paints and coatings to minimize the use of petroleum-based solvents and the hazardous air emissions associated with such solvents.
- Avoid unnecessary grading and removal of vegetative cover to minimize road runoff into surface water.
- Use waterborne or thermoplastic traffic paint.
- Consider deconstruction and reuse of existing buildings rather than demolition.
- Utilize deconstruction, or the selective disassembly of buildings, to facilitate the re-use or recycling of valuable materials.
- Use high efficiency lighting and electronic ballasts to illuminate roadways and tunnels, and install occupancy sensors to control lighting fixtures.
- Design for water conservation. Group plants with similar water needs together so they can be irrigated together and water will not be wasted on plants that do not need it. Proper watering reduces stress on plants and allow their natural resistance to withstand pest attacks without the need for pesticides.
- Employ Environmental Landscape Management (ELM). ELM is a common-sense approach that starts with healthy growing space. Select pest resistant plants, use sound planning techniques, and correctly manage the established landscape. Choose plants according to soil characteristics (pH level, moisture retention), rainfall, and sunlight conditions. Use more native plant species and reduce the use of exotics.

3.7 WATER RESOURCES MANAGEMENT

Water resources include surface waters (*i.e.*, coastal bays, lakes, rivers, and streams) and groundwater. These water resources may be used for drinking water, industrial processes, agriculture, and irrigation. Water resources also provide opportunities for recreation, such as fishing, boating and swimming. Tribes also use water resources to support and maintain traditional cultural practices and ceremonies.

> **EPA's Water** Web site [http://www.epa.gov/OW/index.html] provides access to all EPA's **water quality issues** including groundwater, drinking water, water science, wastewater management, wetlands, oceans, and watersheds.

For each of these uses, tribal governments are one of many governmental entities – tribal, state, and federal – that may be responsible for ensuring that the water is safe and available in sufficient quantities for its intended purpose. Activities related to water resources management include protecting and managing surface waters (including reservoirs) and protecting groundwater. Water resources management programs protect these waters from direct wastewater discharges and problems caused by urban and agricultural runoff. Among the most important ecosystems in terms of watershed protection are wetlands, which filter pollutants, afford protection from floods, and are home to a wide diversity of plants and animals. Also important are estuaries, which serve as both birthplace and nursery for many species of fish and shellfish. Today, the majority of watersheds in the United States have water quality problems, including excess nutrient loading and the presence of pathogens and toxic chemicals; these problems have led to habitat loss, invasive species incursion, fish kills, and can present public health threats.

Tribes have a dual role in the area of water resources management. They may develop separate water quality programs and/or seek to implement federal programs like the CWA. To date, however, most tribes do not exercise federal program authority under the CWA. Where tribes have not received authorization to implement federal programs under the CWA, EPA directly implements programs in Indian country.

In their other role, some tribal governments may be responsible for managing the water resources within their borders as part of their efforts to meet requirements in their NPDES permits for municipal wastewater treatment plants, municipal stormwater runoff, or combined sewer overflow (CSO) controls. While many water resource management activities will overlap these permit requirements, tribal governments may elect to develop water resources management programs whether or not they are required by regulation.

3.7.1 SURFACE WATER PROTECTION

Surface water problems are complex and may vary from region to region. Tribes are beginning to protect and restore watersheds using a variety of methods, including: establishing tribal water quality standards; monitoring on-reservation waters, and in some cases up-stream or other off-reservation waters, to assess water quality; identifying water quality impairment; determining necessary pollution reductions; and taking steps to protect and restore water quality through tribal authorities.

The EPA's Watershed Web site [http://www.epa.gov/owow/watershed/] provides for information on **protecting surface waters and watersheds**.

The CWA provides the basis of federal programs to protect surface water quality, which tribes are also eligible to seek to implement. Tribes may use a watershed approach, which is a management framework that focuses public and private efforts on addressing high priority problems within hydrologically defined geographic areas and considers both ground and surface water flow.

3.7.1.1 WATER QUALITY STANDARDS

Water quality standards are the cornerstone of the nation's surface water protection program and are integral to implementing the water quality framework of the CWA. The water quality standards program is authorized under Section 303(c) of the CWA (33 USC 1313(c)), and implemented through 40 CFR Part 131.

The EPA's Water Quality Standards Web site [http://www.epa.gov/waterscience/standards/tribal/] provides material on **water quality standards**. View "Our Water Our Future: Saving Our Tribal Life Forces Together," [http://www.epa.gov/waterscience/tribes/videoreal.htm], which documents the Pueblo of Acoma and the Confederated Tribes of the Chehalis Reservation efforts to develop water quality standards.

Under the CWA, water quality standards serve two primary purposes. First, they define the water quality goals for a water body. Second, they serve as the regulatory basis for controls beyond technology-based levels of treatment required by Sections 301 and 306 of the CWA. Generally, water quality standards provide a means to attain the goals of the CWA.

Water quality standards consist of three components:

- Uses of the water body (such as boating, swimming, fishing, cultural, or traditional);
- Water quality criteria (limits on pollutants and conditions that will protect the designated use); and
- An antidegradation policy (governing changes in water quality).

EPA-approved water quality standards may be adopted for all surface waters of the United States, including lakes, rivers, streams, intermittent streams, natural ponds, estuaries, near-shore coastal waters and wetlands. For tribes, two of the requirements for applying to administer the water quality standards warrant particular emphasis. First, tribes must demonstrate that they have the technical capability to administer the program or provide a plan showing how the tribe will get such capability. Second, tribes must demonstrate that they have jurisdiction over the affected water resources; this demonstration, among other things, involves delineating tribal authority for areas inside of a reservation's boundary.

Information on water quality standards and criteria for waters in Indian country is available at EPA's Web site Tribes: Water Quality Standards and Criteria [http://www.epa.gov/waterscience/tribes/]. This Web site provides information on the development of sound, scientifically defensible standards, criteria, advisories, limitations and standards guidelines under the CWA and SDWA.

3.7.1.2 WATER QUALITY MONITORING

Ambient monitoring means observing or measuring selected features of an aquatic ecosystem and is essential to surface water protection. It is performed in order to assess the health of an aquatic ecosystem and its ability to support human uses. Ambient monitoring is also used to identify problems or changes early on, provide insight into the causes of problems, and determine whether water quality goals have been achieved. Designing an effective ambient monitoring program involves four elements:

EPA's Monitoring and Assessing Water Quality Web site [http://www.epa.gov/owow/monitoring/] provides material on EPA's **water quality and monitoring activities**.

- Determining what information is needed;
- Choosing the appropriate indicators, methods, and sites for monitoring;
- Determining the time of year, day, and frequency of the monitoring to be done; and
- Assuring the quality of the results.

There are several methos to monitor water conditions:

- Chemical measurements monitor the chemical concentrations in water, sediments, and fish tissue.
- Physical measurements of general conditions, such as temperature, potential of hydrogen (pH), flow, watercolor, and the condition of stream banks and lakeshores; and
- Biological measurements of the abundance and variety of aquatic plant and animal life, and the ability of test organisms to survive in sample water.

Monitoring can be conducted in several ways – at regular sites on a continuous basis, at selected sites on an as-needed basis to answer specific questions, on a temporary or seasonal basis, or on an emergency basis. Increasingly, monitoring efforts are aimed at determining the condition of entire watersheds. This is because of increased understanding of the importance of watershed-based management, which itself reflects the interconnectedness of all types of waterbodies and a recognition of the impacts of land-based activities on the waters that drain the land, including those beneath the ground.

Tribal governments have key monitoring responsibilities and may implement monitoring programs. Pollution control decisions are based on data collected by tribes, as well as federal and state governments and private entities. EPA provides technical assistance on how to monitor, as well as how to report water quality monitoring findings to the federal government. EPA also provides grants for pollution control activities, which tribes (and states) may use to support monitoring programs.

Tribes may seek to obtain grants under Section 104 and 106 of the CWA to carry out effective water pollution control programs. Section 106 grants may be used to fund a wide range of water quality activities, including: water quality planning and assessments; development of water quality standards; ambient monitoring; development of total maximum daily loads (TMDLs); issuing permits; groundwater and wetland protection; nonpoint source control activities (including nonpoint source assessment and management plans); and watershed assessments. Section 104 grants may be used to focus on innovative demonstration and special projects. Among the efforts eligible for funding are research, investigations, experiments, training, environmental technology demonstrations, surveys, and studies related to the causes, effects, extent and prevention of pollution. See Appendix F, Funding Resources.

3.7.2 LISTING OF IMPAIRED WATERS

The CWA requires the listing of each currently impaired and threatened water body, and the setting of priorities for their cleanup; the impaired waters list is also

US Watershed Assesment Tracking and Environmental Results Tool, use to find impaired waters at http://epa.gov/waters/tmdl/expert_query.html.

called the 303(d) list, named after the section of the CWA that requires it. Generally, any water body that does not meet, or is not expected to meet, its water quality standards after application of technology-based pollution controls is considered an impaired water body. Any water body that is not impaired but which, based on expected changes in loadings or conditions, is considered a threatened water body.

Tribes may be involved in listing of impaired waters in one of two ways:

- As the entity responsible for the initial listing and biannual listing update, through authorization by EPA under the CWA.
- As a reviewer of listing decisions made by bordering tribes or states on shared water bodies.

Tribes may apply to EPA for authority for assigning priorities and developing plans to clean up the listed waterbodies. To date, however, no tribes have authority under the CWA to list impaired waterbodies. Both the initial listing and the updated listing are sent to EPA. These plans are known as TMDLs, and are discussed in Section 3.7.3. The priorities for establishing TMDLs are based upon the severity of the pollution and the designated uses of the particular waters. EPA recommends that the criteria for making priority decisions include the level of risk to human health and the environment; the degree of public interest and support; the aquatic habitat's vulnerability to pollution; and the importance of recreational, aesthetic, or economic uses.

Tribes can influence listing decisions of neighboring states by providing information about the health of a water body to the neighboring states and/or directly to EPA. The list of impaired waterbodies may include waters for which water quality problems are reported by governmental agencies, the general public, or academic institutions.

3.7.3 TOTAL MAXIMUM DAILY LOADS

A TMDL specifies the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and allocates pollutant loadings among point and nonpoint pollutant sources. Tribes can become involved in establishing TMDLs in three ways. First, tribes can develop EPA-approved water quality standards and develop their own TMDLs affecting the listed waterbodies on the reservation. Second, tribes may provide information and become involved in the TMDL processes and decisions with states affecting shared water bodies. Third, tribes may assist EPA in developing TMDLs for Indian country. The second and third

> EPA's **Total Maximum Daily Loads (TMDLs)** Web site [http://www.epa.gov/owow/tmdl/] provides useful guidance information.

ways are effective options for tribes to become familiar with the TMDL process and help ensure their interests are represented. TMDLs are submitted to EPA for review and approval. If EPA disapproves a TMDL, the Agency must establish TMDL within 30 days of the disapproval. The TMDL program is found in section 303(d) of the CWA and 40 CFR Part 131.

A TMDL is the sum of the allocated pollutant loads and is set at a level necessary to implement the applicable water quality standards; a TMDL includes:

- Wasteload allocations from point sources; and
- Load allocations from nonpoint sources and natural background conditions.

A TMDL must contain a margin of safety and a consideration of seasonal variations. In addition, EPA encourages authorized tribes and states to identify a monitoring plan and schedule for considering revisions to TMDLs that will be implemented over time.

3.7.4 Implementation of Watershed (Surface Water) Protection Programs

EPA's Watershed Web site [http://www.epa.gov/owow/watershed/] provides material on EPA's **watershed protection issues**.

The CWA requires that any point source discharger into surface waters obtain an NPDES permit, including any facility discharging into waters in Indian country. As discussed in Chapter 3.9, publicly owned treatment plants are required to provide at least secondary treatment for their discharged wastewater. When this level of treatment does not protect receiving waters, additional treatment must be applied in order to meet water quality standards.

Wastewater discharges from commercial/industrial sources may contain pollutants at levels that could effect the quality of receiving waters. The NPDES permit program establishes specific requirements for discharges from these sources. Depending upon the type of industrial or commercial facility operated, more than one NPDES program may apply. For example, stormwater run off from an industrial facility or from a construction site may require an NPDES permit under the stormwater program. An industrial facility may also discharge wastewater to a sewer system and be covered by the NPDES pretreatment program. Alternatively, an industrial facility may discharge wastewater directly to a surface water and need an NPDES permit issued by EPA.

Tribes may seek authorization from EPA to administer NPDES programs. To date, no tribes have been authorized. However, tribes can have a role in the permitting process through the

public participation provisions of the NPDES regulations (40 CFR Part 122). These participation provisions enable tribes to comment during the public hearings or notice and commit opportunities and appeal permit decisions. Many point source discharges remain undetected and unpermitted. Tribes can visually survey the rivers and streams of their watersheds to identify sources of pollution that are affecting their water resources. These unpermitted discharges can be brought to EPA's and the permitting authorities attention in order to stop the discharge, or to force the polluting facility to obtain a discharge permit and undergo a public comment period.

3.7.4.1 BEST MANAGEMENT PRACTICES

EPA's National Stormwater BMPs found at http://epa.gov/npdes/stormwater/ .

Best Management Practices (BMPs) may be structural (*e.g.*, stormwater detention/retention ponds) or nonstructural (*e.g.*, street sweeping) and may include managing existing sources or conduits of contamination, such as roads, bridges, and stormwater systems. These activities help tribal governments protect their water supplies, comply with stormwater permits, prevent soil erosion into water, and prevent problems associated with agricultural runoff.

Structural BMPs are designed to prevent, inhibit, or slow the rate at which stormwater runoff or spilled contaminants reach a body of water. BMPs, including extended retention ponds, wet ponds, and constructed wetlands, prevent contaminants from reaching surface waters by capturing runoff and allowing it to filter through the soil or evaporate, rather than directly flowing to a water body. Additional filtering structures include sand filters, oil and grit separators, and infiltration basins. Containment structures may require periodic maintenance to remove accumulated sediment, while filtering structures may require maintenance to remove debris and ensure efficient operation. Each of these structures helps remove contaminants (sediments, oils and greases, pesticides, fertilizers, debris) from rainwater and helps to protect the surface water for its intended use. Some structural BMPs that rely on stormwater infiltration may be subject to federal Underground Injection Control (UIC) regulations.

Nonstructural BMPs include various operational activities such as sweeping streets and maintaining or preserving grassed swales, vegetative buffer areas, and wetlands. Street sweeping protects surface waters by removing such solids as sand, debris, and litter that would otherwise be transported to the surface water during a rain event. Street sweeping also prevents contaminants that may be absorbed by sand and debris from reaching surface water.

Vegetative buffer areas are physically active controls designed and maintained to filter pollutants and thereby prevent them from reaching surface waters; vegetative buffer areas are essential to maintaining surface water quality. These areas complement passive control, such as land use or

zoning laws, which prevent activities (*e.g.*, paving, pesticide use) that could increase surface water contamination.

Wetlands are also used to help break down contaminants before they reach open bodies of water. Tribal governments may actively manage marsh areas by adding new plants and removing accumulated sediment.

Tribes may seek financial assistance from EPA and other federal agencies to assist them in protecting their water resources. EPA provides grants to tribes for the construction of wastewater and drinking water treatment facilities to develop a surface water protection program targeted at controlling pollution from nonpoint sources. See Appendix F, Financial Resources.

3.7.5 RESERVOIR MANAGEMENT

Protecting reservoirs is a key component of a tribal government's surface water protection program. Keeping reservoirs clean and free from contamination helps ensure a safe supply of drinking water. In addition, preventing debris, sedimentation, litter, chemicals, or other pollutants from entering a reservoir reduces the amount of treatment necessary for the water to meet drinking water standards. While managing reservoirs includes many of the BMPs described in Section 3.7.4.1, it also includes establishing security around the reservoir and creating buffer zones.

Reservoir security involves controls to prevent direct litter, dumping, or inappropriate use. Security measures may include fencing at the water line or fencing of a larger surrounding area. Providing limited access roads or trails in the vicinity of the reservoir is another way to protect reservoirs. While not preventing contamination, limiting access roads and trails can prevent large-scale dumping, limiting pollution to litter or human waste. Such efforts can also enhance the protection of cultural resources and hunting, fishing, and gathering sites.

3.7.6 SOURCE WATER (GROUNDWATER) PROTECTION

Tribal governments that provide or maintain drinking water supplies within their boundaries are encouraged to develop Source Water Assessment and Protection Programs. Source Water Assessment and Protection Programs help enable tribes to assess possible threats to their

EPA's Source Water Protection Web site [http://www.epa.gov/safewater/protect.html] contains a variety of information on **groundwater and sourcewater protection** to prevent drinking water contamination.

public drinking water supply sources and to develop protection measures to protect these sources against those threats.

The program begins with the assessment phase:

- Mapping of source water areas around the drinking water source;
- Identifying potential contaminant sources in the mapped protection area that may impact the drinking water supply;
- Determining the magnitude of the threat posed by the potential sources of contamination; and
- Notifying the public of the results of the assessment.

Source water protection elements are developed and implemented based on the results of the assessment. Typical Source Water protection elements may include:

- Sole source aquifer designation;
- Zoning ordinances;
- Site plan reviews;
- Design standards for new construction and operating standards for ongoing land use activities;
- Property or easement purchases;
- Public education;
- Groundwater monitoring;
- Household hazardous waste collection; and
- Integrated pest management.

Tribal governments may develop an array of regulations to enhance groundwater protection. Tribes may also want to partner with state, local, and regional planning bodies or water commissions to ensure their views are incorporated into regional watershed decisionmaking.

3.7.6.1 Elements of a Source Water Protection Plan

Sole Source Aquifer Designation

Tribes may seek sole source aquifer designations to protect drinking water supplies in areas with few or no alternative sources and where available alternatives sources would be extremely expensive. The designation protects an area's groundwater resource by requiring EPA review of

any proposed projects within the designated area that receive federal financial assistance. The program typically reviews projects such as highway construction, airports and wastewater treatment facilities, but all proposed projects receiving federal funds are subject to review to ensure they do not endanger the water source.

The program also provides for EPA review of federal financially assisted projects planned for the area to determine the projects' potential for contaminating the aquifer. Based on this review, no commitment of federal financial assistance may be made for projects "which the EPA Administrator determines may contaminate such aquifer," although federal funds may be used to modify projects to ensure that they will not contaminate the aquifer. Section 1424(e) of the SDWA addresses sole source aquifer designations.

Zoning Ordinances

Zoning and subdivision ordinances are used to direct or limit development in a wellhead protection area to can limit the number of potential sources of contamination. Zoning ordinances may restrict or regulate land uses within the protected area while subdivision ordinances are designed to limit the division of land for sale or development. See Section 3.6.1.

Site Plan Reviews

Site plan reviews require developers to submit plans for approval for development occurring within a given area. Site plan reviews help minimize the impact on a protected area by requiring compliance with protection ordinances and giving the tribal government an opportunity to review and approve development activities prior to implementation.

Design and Operating Standards

Tribal governments can establish design standards for new construction and operating standards for ongoing land use activities. Design standards can ensure that new buildings or structures placed within a wellhead protection area do not pose a threat to the water supply. For example, a tribe could develop design standards for gas stations in order to reduce runoff that could contaminate the water supply. Operating standards minimize threats from ongoing activities, such as application of fertilizers and pesticides or storage and use of hazardous materials. These standards may also include prohibition of potential pollutant sources within protected areas.

Property or Easement Purchases

Tribal governments can purchase property or property easements on land within the protected areas. These purchases can prevent future development and give the tribal government land on which to maintain vegetative buffers to help prevent contaminants from reaching the protected area.

Household Hazardous Waste Collection

As part of their wellhead protection programs, tribal governments may establish household hazardous waste (HHW) collection programs. HHW collection programs provide an opportunity for the safe disposal of oils, fertilizers, gasoline, or other household chemicals that residents might otherwise dispose of on the ground or in a landfill designed to accept only non-hazardous solid waste. By collecting and safely disposing of these materials, tribal governments prevent them from potentially reaching underground drinking water supplies. See Section 3.11.5.

Groundwater Monitoring

As part of wellhead protection programs, tribal governments may monitor the groundwater within and leading to a drinking water aquifer. In addition, a tribe with appropriate regulatory authority could require owners of businesses that have the potential to contaminate groundwater to monitor groundwater as it leaves their property. EPA regulations may require monitoring in particular circumstances (*e.g.*, underground storage tanks) and tribal governments may request property owners who participate in particular activities (*e.g.*, agricultural fertilizer/pesticide application) to periodically monitor groundwater to determine whether it is becoming contaminated. Proper sampling and well drilling techniques are important to prevent aquifer contamination.

Public Education

Tribal governments may initiate efforts to educate the public on potential threats to groundwater, on how the public's actions impact groundwater, and the need to prevent groundwater contamination. Some examples of efforts that tribes may pursue include sponsoring advertisements and radio programs, distributing fliers, posting information on community bulletin boards, and providing information at tribal meetings.

Integrated Pest Management

Integrated pest management (IPM) is another way to protect reservoirs. IPM is an approach to pest management that blends all available management techniques – nonchemical and chemical – into one strategy: monitor pest problems, use nonchemical pest control, and resort to pesticides only when pest damage exceeds an economic or aesthetic threshold. Using IPM will enable the tribal government to determine whether pesticide application is appropriate in and around groundwater and, if appropriate, which type of pesticide to apply. Additional information about IPM is found in section 3.10.6.

3.7.6.2 Underground Injection Control

> EPA's **Underground Injection Control** Web site [http://www.epa.gov/safewater/uic.html] provides material on EPA's UIC program.

The UIC program works with tribes and local governments to oversee the underground injection of waste to prevent the contamination of ground water drinking water resources. For regulatory purposes, EPA groups wastes into five classes. Classes V wells represent the category most commonly found in Indian country. They include shallow disposal systems such as dry wells, septic systems, leach fields, and similar types of drainage wells that are used to dispose of fluids into or above underground source of drinking water. The UIC regulations were revised in 1999 and additional provisions for two Class V well types were implemented. The revisions, referred to as the Class V Rule, ban the use of large capacity cesspools and motor vehicle waste disposal wells. To protect groundwater tribal governments should work with their local EPA UIC program representatives to ensure these well types are properly closed.

3.7.7 Wetlands

> EPA's Wetlands Web site [http://www.epa.gov/owow/wetlands/] provides material on EPA's **wetlands program**.

Tribal governments, in partnership with EPA and other federal agencies, may be responsible for protecting, restoring, and maintaining the chemical, physical, and biological integrity of the waters on tribal lands as part of the waters of the United States.

Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Under the CWA, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Wetlands in Indian country are both pristine and degraded and require an adaptive strategy that includes protection, restoration, and mitigation. Tribal wetlands programs typically start with determining the location, extent, and condition of a tribe's wetlands. Tribes with wetlands that are in a relatively pristine state focus on protecting the resource from potential impacts. Tribes with wetlands that have been adversely impacted focus on stopping existing degradation, restoring previously degraded wetlands, and mitigating potential future impacts on wetlands. Whether planning to address pristine or degraded wetlands, tribal wetlands programs can protect economic, ecological, aesthetic, recreational, and medicinal values.

Although many tribes have wetland programs, most have yet to develop specific wetland regulations or amend their environmental laws and regulations to include wetland and other water quality issues.

3.7.8 WATERSHED PROTECTION AND MANAGEMENT

A watershed protection approach is a strategy to effectively protect and restore aquatic ecosystems and protecting human health. This strategy recognizes watersheds as physically defined units that are functionally distinct; that requires problem solving at the watershed level, rather than at the individual water body or discharger level.

> EPA's Watershed Academy Web Online Training Web site [http://www.epa.gov/watertrain/] provides **watershed management training courses**.

Major features of a watershed protection approach are:

- Targeting priority problems;
- Promoting a high level of stakeholder involvement;
- Identifying and integrating solutions that make use available expertise and authority; and
- Measuring success through monitoring and other data gathering.

To address water resource problems more effectively, tribes both should tailor their program tp the watershed of concern and be as comprehensive as possible. Many tribal watershed approaches address natural resource issues that cross geographic, jurisdictional, and political boundaries. These approaches recognize the need for water supply, water quality, flood control, navigation, hydropower generation, fisheries, biodiversity, habitat preservation, and recreation. In addition, the issues of cultural values and sacred sites are important to tribal watershed management.

Tribes can support and facilitate many of the management activities likely to be taken by watershed programs outside of Indian country. Tribes may also want to partner with regional planning bodies or water commissions to ensure their views are incorporated into regional/watershed decision-making. The following steps provide a comprehensive approach to watershed protection:

- Scoping (identify issues and stakeholders);
- Assessment (acquire and analyze data);
- Synthesis (integrate results of the assessment);
- Management solutions (develop options for improving conditions);
- Implementation (implement selected option(s)); and
- Adaptive management (monitor conditions and modify plans).

3.7.9 POLLUTION PREVENTION AND WATER RESOURCES MANAGEMENT

The best way to protect water quality is to avoid polluting water in the first place. When pollution reaches surface or underground waterways, it can have many adverse effects, including impacts on drinking water sources. Water resource management approaches vary from community to community depending on various factors such as the source of water, size and population of the community, needs of the population, and the water supply system integrity. For example, water conservation may be a very high priority for some tribes, while other tribes may enjoy an abundance of source water. But in all cases, there is a need to protect water resources and manage them wisely.

As with other tribal government activities, by incorporating pollution prevention criteria into the decisionmaking processes, tribal decision makers and water resource managers can:

- Help prevent and reduce waste and pollution;
- Prevent and reduce potentially harmful chemical exposures to employees and members;
- Reduce risks of accidents and releases; and
- Prevent or reduce potential liabilities and regulatory compliance burdens, while providing service delivery and cost savings to their organizations, customers and communities.

Programs that focus on municipal and industrial pollution prevention help prevent or reduce water pollution. Development of tribal source-water management programs can help achieve CWA and SDWA goals. Tribal education and outreach attempts can extend not only to members, but to non-members as well. Extension to non-members provides an opportunity to familiarize non-members around a reservation with the tribe's role in managing and protecting resources, and the tribal interest in working with the larger community to conserve natural resources.

3.7.9.1 TYPICAL WASTES GENERATED OR LOSSES CONTRIBUTING TO POLLUTION

Overall (affecting surface and groundwater)

- Releases into stormwater sewer systems of hazardous substances such as used oil or household or yard chemicals;
- Industrial site releases;
- Runoff of pesticides, fertilizers, and herbicides (impacts include degradation of stream banks);
- Lack of education, awareness, and participation (public and private sector) in programs for collection, recycling, and disposal of household hazardous waste materials;
- Lack of education, awareness, and participation (public and private sector) in water protection and conservation activities; and
- Combined sewer overflows discharging excess wastewater, including untreated human and industrial waste, toxic materials, and debris.

Additional for Surface Water

- Lack of residential and commercial development stormwater management controls;
- Flood control projects that impair water quality; and
- Soil runoff from construction and other sites.

3.7.9.2 Top Pollution Prevention Opportunities – Outreach & Promotion

Overall (surface and groundwater)

- Develop local stormwater management and pollution prevention programs;
- Develop source water (groundwater) protection programs such as the EPA's Source Water Assessment and Protection Program [http://www.epa.gov/safewater/protect.html];
- Develop household hazardous waste collection initiatives;
- Require pollution prevention BMPs as a permit condition under the CWA. Tribes could design BMPs on a case-by-case basis or develop generic BMPs that would be applied to all facilities in a given industrial category;
- Set protective limits for reduction of discharges to wastewater treatment plants;
- Set protective limits for discharges of hazardous substances and petroleum storage;
- Adopt landscaping codes (*e.g.*, institute irrigation restrictions);
- Establish different pricing plans for households and businesses to reduce demand and remove unwanted subsidies;
- Investigate reduced water use projects (*i.e.*, ultra-low flush "toilet voucher programs," low flow shower heads, sprinkler systems that are sensitive to rainfall, etc.);
- Establish programs to conduct in-home water audits, leak repairs, and subsidized retrofits with water conserving fixtures;
- Limit or exclude industrial discharges to septic systems through design review; and
- Work with EPA UIC representatives to properly close endangering Class V well types.

Additional for Surface Water

- Develop local surface water protection programs;
- Use local plants and establish sustainable water collection systems;
- Develop erosion and sediment control programs; and
- Set protective discharge limits for stormwater controls.

3.7.9.3 Top Pollution Prevention Opportunities – Internal Tribal Government Operations

Overall (surface and groundwater)

- Conduct leak detection programs and perform plumbing fixture retrofits;
- Upgrade water meters to ensure accurate readings (use water inventory meter and retrofit programs);
- Develop BMPs for tribal government internal operations, in order to lead by example;
- Integrate water conservation into new facility design;
- Set protective limits to reduce of internal discharges to wastewater treatment plants;
- Set protective limits for internal discharges of hazardous substances and petroleum storage;
- Limit or exclude internal discharges to septic systems;
- Use water recycling for golf courses, parks, landscaping, schools, firefighting, fountains, street sweeping, vehicle washing, and irrigation;
- Adopt EPA's Water Efficiency Program [http://www.epa.gov/owm/water-efficiency/], to reduce the need for wastewater treatment facilities, maintain stream flows and health aquatic habitats, and reduce the energy used to pump and treat water; and
- Increase pervious surface areas by integrating low impact development techniques.

Additional for Surface Water

- Reconstruct or upgrade wastewater treatment plants;
- Investigate wetland mitigation banking opportunities;
- Set protective internal discharge limits for stormwater controls.

3.8 WATER SUPPLY

Many tribal governments are responsible for operating public water systems (PWSs). A regulated PWS is any water system that makes water available for drinking to 15 or more connections, or regularly serves an average of 25 individuals daily at least 60 days out of the year. PWSs are designed to provide and maintain reliable, safe, high-quality drinking water to consumers in their homes, at work, at school, at restaurants, roadside rest stops, and any other place the PWS makes water available to the public.

EPA's Ground Water and Drinking Water Web site [http://www.epa.gov/safewater/tribal.html] provides material on EPA's **tribal drinking water program**.

There are three types of public water systems:

- A **Community Water System (CWS)** supplies water to the same residential population year-round. Examples include cities, towns, and rural water systems.
- A **Non-Transient Non-Community Water System (NTNCWS)** regularly supplies water to at least 25 of the same people at least six months per year – but not to their residences. Examples include schools and factories that have their own water supply.
- A **Transient Non-Community Water System (TNCWS)** provides water to at least 25 different people a day for six months out the year (typically in a place where people do not remain for long periods of time.) Examples include restaurants, rest stops, and campgrounds that have their own water supplies.

The SDWA, giving EPA the authority to protect the public from chemical, physical, radiological, and microbiological contaminants in their drinking water. EPA has used this authority to develop regulations establishing maximum contaminant levels (MCLs) for many substances that can be harmful in drinking water and treatment technique regulations requiring public water systems to remove or inactivate other substances found in their source water. Other SDWA regulations are intended to protect the quality of source water and to ensure treated drinking water remains safe until it is delivered to consumers.

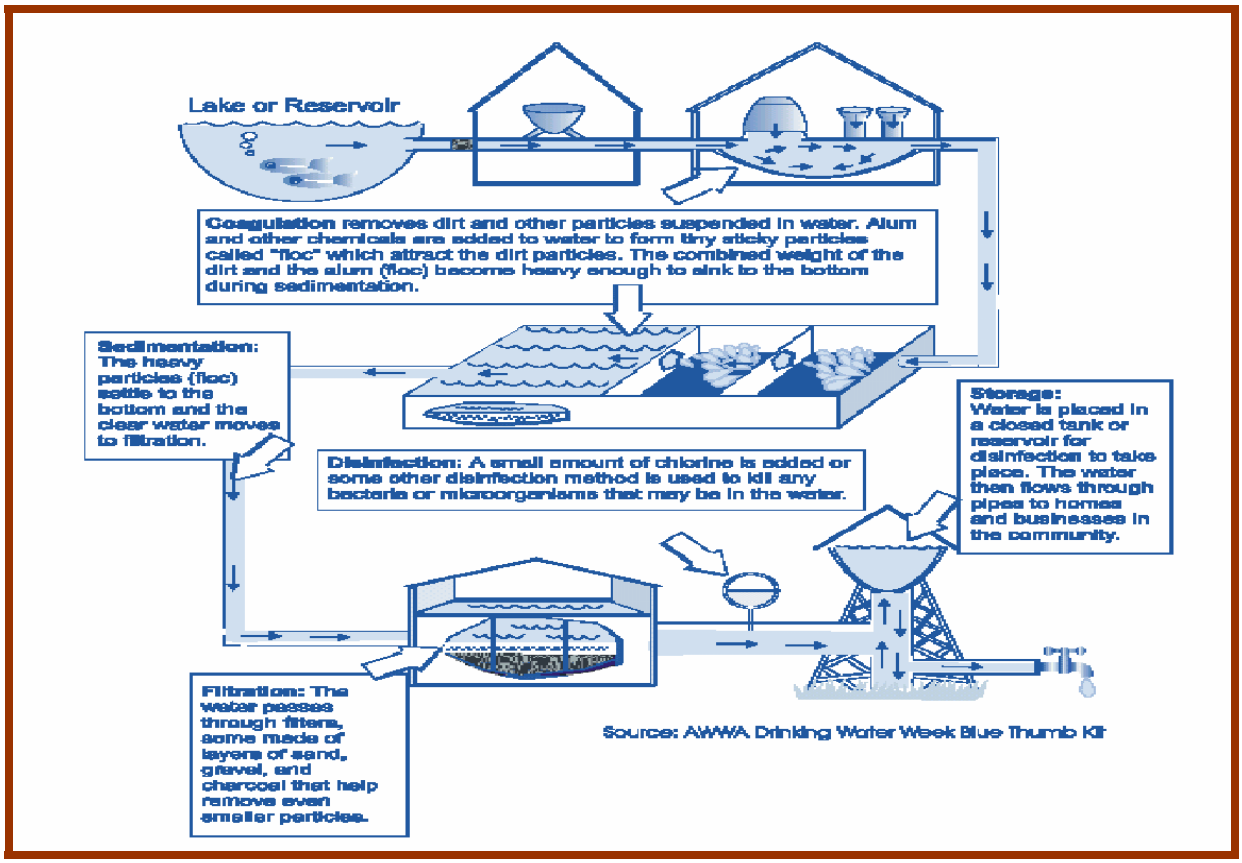
Tribal PWSs are required to comply with all drinking water regulations that apply to their systems. They are also responsible for ensuring that the required water samples are collected and tested, and that the results of those tests and other required reports are sent to EPA, or to the tribal regulatory office if the tribe has been approved to exercise primary enforcement authority ("primacy") for its drinking water program. To date, only the Navajo Nation has been approved for primacy. EPA administers the drinking water program for all other tribes.

The drinking water requirements can be found at 40 CFR 141. The rules applicable to a particular public water system can vary depending on the PWS's size (number of people it serves) and type (community, non-transient non-community, or transient non-community), and

the type of source water (groundwater or surface water) the PWS relies upon. Tribal PWS operators should contact EPA or its circuit riders to make sure they have correctly identified the requirements that their systems must meet.

The operations necessary to provide and maintain reliable drinking water include water treatment and water distribution, and are discussed in detail below. A Typical Water Treatment Plant is displayed in Exhibit 3-3 below.

Exhibit 3-3. Typical Water Treatment Plant



3.8.1 WATER TREATMENT

EPA's Safe Drinking Water Tools for PWS provide "One"-stop knowledge portal to improve PWS operation.

The amount and type of treatment applied by a PWS varies with the source water type and quality. Drinking water can come from either surface water or groundwater sources. Water pumped from wells drilled into underground aquifers - geological formations containing water - is called groundwater. Many, but not all, groundwater systems can satisfy all federal drinking water requirements without applying any treatment. Water that is pumped and treated from sources open to the atmosphere, such as rivers, lakes, and reservoirs, is known as surface water.

Surface water sources, which are more exposed to contaminants in stormwater runoff and to microbiological contaminants, typically require more rigorous treatment. More than 90 percent of tribal PWSs use groundwater sources, but the approximately 75 tribal PWSs that use a surface water source are often the tribal systems serving the largest populations. Improper operation of these large systems could put thousands of people at risk of illness or death.

Because water from both surface water and groundwater sources can become contaminated if it is not protected, a PWS must shelter its water source from chemical spills, human activities that can degrade water quality, and careless sanitary procedures. It is easier and more cost-effective for a PWS to start with relatively clean water. Cleaning up contaminated source water and making it safe to drink can be complicated, costly, and sometimes impossible. See Section 3.7.1

Once the quality of its source water has been determined, a PWS should consult with EPA and its partners to develop an appropriate treatment process, or "treatment train." A typical treatment train for PWSs that use surface water sources will include screening at the point of intake to strain out large objects and fish; presedimentation to allow many suspended solids to settle out of the source water by simple gravity; coagulation/flocculation/sedimentation to cause more of the suspended solids, chemicals, and impurities to settle out of the water; filtration to remove finer suspended particles and larger microbial contaminants; and disinfection to kill or inactivate microscopic organisms that can cause disease.

3.8.2 WASTE DISPOSAL

Tribal PWSs should note that some treatment processes or technologies can produce waste products or waste streams that are themselves regulated. Settling ponds are intended to capture solids and chemicals removed from the source water and chemicals used to trigger coagulation and flocculation. Residual wastes can collect in filter media where they can become trapped or released as backwash during filter cleaning operations. The type of waste generated depends on the treatment technology selected and can also be affected by the quality of the source water. While the treatment trains used by tribal PWSs typically will not generate hazardous wastes, a tribe should work with EPA or its circuit riders to identify potential waste products and streams and to determine if they must be handled in accordance with the requirements of RCRA and the CWA. EPA can also help the tribe determine the best waste disposal option based on the system's treatment train, the type of waste or wastewater generated, and level of contaminants present in the waste streams.

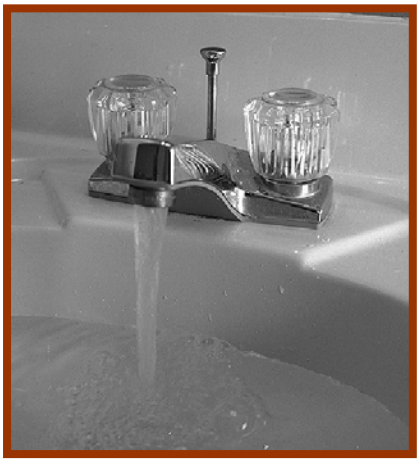
3.8.3 STORAGE AND MANAGEMENT OF DISINFECTING CHEMICALS

Brief explanations

- Emergency Release Notification (EPCRA Section 304)
- Hazardous Chemical Inventory and Reporting (EPCRA Sections 311 and 312)
- Risk Management Planning (CAA Section 112 (r))

A tribal PWS that disinfects its water is likely to use, and have on site, chlorine, chloramines, or chlorine dioxide. These are the most commonly used disinfection agents because they effectively kill or inactivate biological contaminants in source water and remain in the treated water to prevent recontamination in the distribution system. If the disinfecting PWS is large enough to store or use a specified amount of these chemicals, it will be subject to the applicable planning and reporting requirements of OSHA, EPCRA, FIFRA (if using chlorine or other registered pesticides) and Section 112(r) of the CAA. The PWS should investigate disinfection technologies before deciding which method to use, and contact EPA if it has any questions.

3.8.4 WATER DISTRIBUTION



Distribution systems deliver drinking water from the treatment plant to the consumers. A distribution system can include storage facilities or tanks, water mains, service lines (lines from water main to the building or property being served), and the associated valving and accessories. The distribution system must maintain adequate and constant water pressure to prevent contaminants from being drawn into the pipes, and must maintain a disinfectant residual to ensure that microbial contamination does not occur after water leaves the treatment plant.

Distribution systems can be contaminated through cross-connections. A cross-connection is defined as an actual or potential connection between a potable supply of water and a non-potable supply and are typically due to poor plumbing practices. Cross-connections allow the entry of contaminated water from sources such as an adjacent sewer pipe, an industrial source, or stormwater runoff. The contaminant enters the distribution system if the pressure of the polluted source exceeds the water pressure in the distribution system. This action is called backflow and may be due to backpressure or back siphonage. Cross connections lie dormant until backflow occurs. Cross connections controls to prevent distribution system contamination can be found in a variety of regulations, standards, and codes, including plumbing codes, health codes, and

building codes. These vary widely throughout Indian country. Tribal PWSs should check with their EPA Regional Office for more information.

3.8.5 OPERATIONS AND MAINTENANCE

Proper operation and maintenance (O&M) is essential to ensuring that a PWS effectively and efficiently provides safe drinking water to its consumers. Ensuring that the entire *water system infrastructure* (*i.e.*, storage, treatment facilities, and distribution systems) is properly maintained can prevent entry and growth of microbiological contaminants in the distribution system and preserve the system's overall structural integrity. Proper O&M can also result in lower costs to the PWS. These O&M costs include:

- The cost of labor (including training of operators);
- Energy costs;
- The cost of rehabilitating or replacing equipment;
- Chemicals costs;
- The cost of waste disposal;
- Safety and security costs; and
- Other miscellaneous costs like insurance and taxes.

Operator certification information is found at http://epa.gov/safewater/opcert/opcert.htm

A preventive maintenance program will allow a tribal PWS to maximize the usefulness of equipment and piping, help avoid problems, and cut down or delay rehabilitation or replacement costs. Some key items and equipment that should be included in a preventive maintenance program include:

- Monitoring equipment calibration;
- Pump inspection and maintenance;
- Inspection and maintenance of disinfection system;
- Valve inspection and maintenance;
- Maintenance and repair of water mains and storage tanks or reservoirs;
- Distribution system flushing;
- Cross connection and backflow prevention;
- Distribution system piping repair or replacement; and
- Safety (confined space measures, lockout/tagout procedures, oxygen deficiency hazard measures).

The above list is not all-inclusive and tribal PWSs should tailor their preventive maintenance programs to meet their specific needs. In implementing a preventive maintenance program, a tribal PWS should follow manufacturer equipment instructions and recommendations, plumbing, electrical, and building codes, proper engineering and construction practices, safety standards, MSDSs, and any other applicable requirements (including permits). Tribal PWSs should contact their EPA Regional Office for more information on developing and implementing a preventive maintenance program, including system-specific O&M issues.

Sanitary Surveys help to ensure proper PWS operation. A sanitary survey is intended "to evaluate and document the capabilities of the water system's sources, treatment, storage, distribution network, operation and maintenance, and overall management to continually provide safe drinking water and to identify any deficiencies that may adversely impact a public water system's ability to provide a safe, reliable water supply." Sanitary surveys are indispensable for ensuring the delivery of safe water on a sustainable basis. When conducted properly and with appropriate follow-up, sanitary surveys can:

- Reduce the risk of waterborne disease;
- Provide an opportunity to educate system operators; and
- Identify systems needing technical or capacity development assistance.

EPA's sanitary survey resources are located at http://epa.gov/safewater/dwa/resources.

3.8.6 SAFETY AND SECURITY

A tribal PWS must comply with safety requirements like any other work environment. For example, the use of hazardous chemicals, such as chlorine for disinfection, at a PWS would require MSDSs. Extreme caution should always be exercised by anyone performing O&M procedures. Safety procedures such as confined space, trench shoring (for excavations), and lock-out/tag-out should always be used. Other regulations may also apply.

Security practices should also be incorporated into the every day business functions of a tribal PWS. Activities such as fence cutting and lock picking, previously dismissed as harmless, may be indications of more serious threats to the PWS. Tribal PWSs must be prepared to respond to threats, as well as a wide range of emergencies, such as natural disasters. Improved security preparations provide for a more effective and efficient response. A tribal PWS should contact EPA for more information on tools, training, and technical assistance pertaining to water system security and emergency response. For more information, see http://cfpub.epa.gov/safewater/watersecurity/index.cfm

3.8.7 SAFE DRINKING WATER ACT COMPLIANCE

Tribal PWSs are responsible for complying with SDWA requirements with respect to water quality, treatment techniques, recordkeeping, and reporting. As part of those regulations, water supply facilities are required to sample and analyze the water for specific chemicals and microbiological organisms to ensure that applicable treatment techniques are followed and the MCLs are not exceeded. Tribal PWSs are in violation and may be subject to fines and other penalties if any of the following occur:

- The system exceeds an MCL;
- The system fails to comply with a treatment technique;
- The system fails to monitor for contaminants;
- The system fails to report monitoring results to the Primacy Agency; or
- The system fails to provide the appropriate public notification.

All tribal PWSs also must maintain records, including sample analyses, actions taken to correct violations, sanitary surveys of the system, and variances or exemptions granted to the system.

Drinking water standards and MCLs are found at EPA's Ground Water and Drinking Water Web site [http://www.epa.gov/safewater/standards.html].

When MCLs are exceeded, tribal PWSs must notify EPA, or their tribal regulatory office if they have been granted primacy. A PWS that exceeds an MCL is also required to notify its consumers of the violation. The public notification requirements are based on the severity of the violation. Generally speaking, if the contaminant at issue can make people sick immediately, the notification must be made within 24 hours. EPA's Final Drinking Water Public Notification Regulations Web site [http://www.epa.gov/OGWDW/pws/pn/rulefact.html] provides more information.

In addition, every CWS is required to provide its customers annual Consumer Confidence Reports that describe the quality of the system's water source, identify any regulated contaminants detected in the drinking water, and note any violations of drinking water standards. For more information, go to EPA's Consumer Confidence Report (CCR) Web site [http://www.epa.gov/safewater/ccr/index.html] provides additional information.

For more information about any issues related to supplying public drinking water, please contact your Regional EPA Tribal Drinking Water Coordinator listed in Appendix B.

3.9 WASTEWATER MANAGEMENT

Some tribal governments are responsible for designing, planning, constructing, financing, operating, and maintaining wastewater treatment plants. Other tribes may run regional wastewater treatment plants for service areas exceeding their reservation and enter into service contracts with regional authorities or individual users. In both cases, tribes are responsible for the conveyance systems that transport wastewater to the treatment plant and discharge storm water runoff to nearby water bodies.

> EPA's Tribal PWSS and UIC Web site [http://www.epa.gov/safewater/tribal/history.html] provides material on EPA's **Wastewater** point sources programs, including pipes, ditches, and sanitary or storm sewers. EPA's **Clean Water Indian Program** page [http://www.epa.gov/owm/mab/indian/index.htm] provides additional information.

A publicly owned treatment work (POTW) consists of the wastewater treatment plant and a collection system that transports sewage to it. A collection system can be either of two types (or some combination of the two):

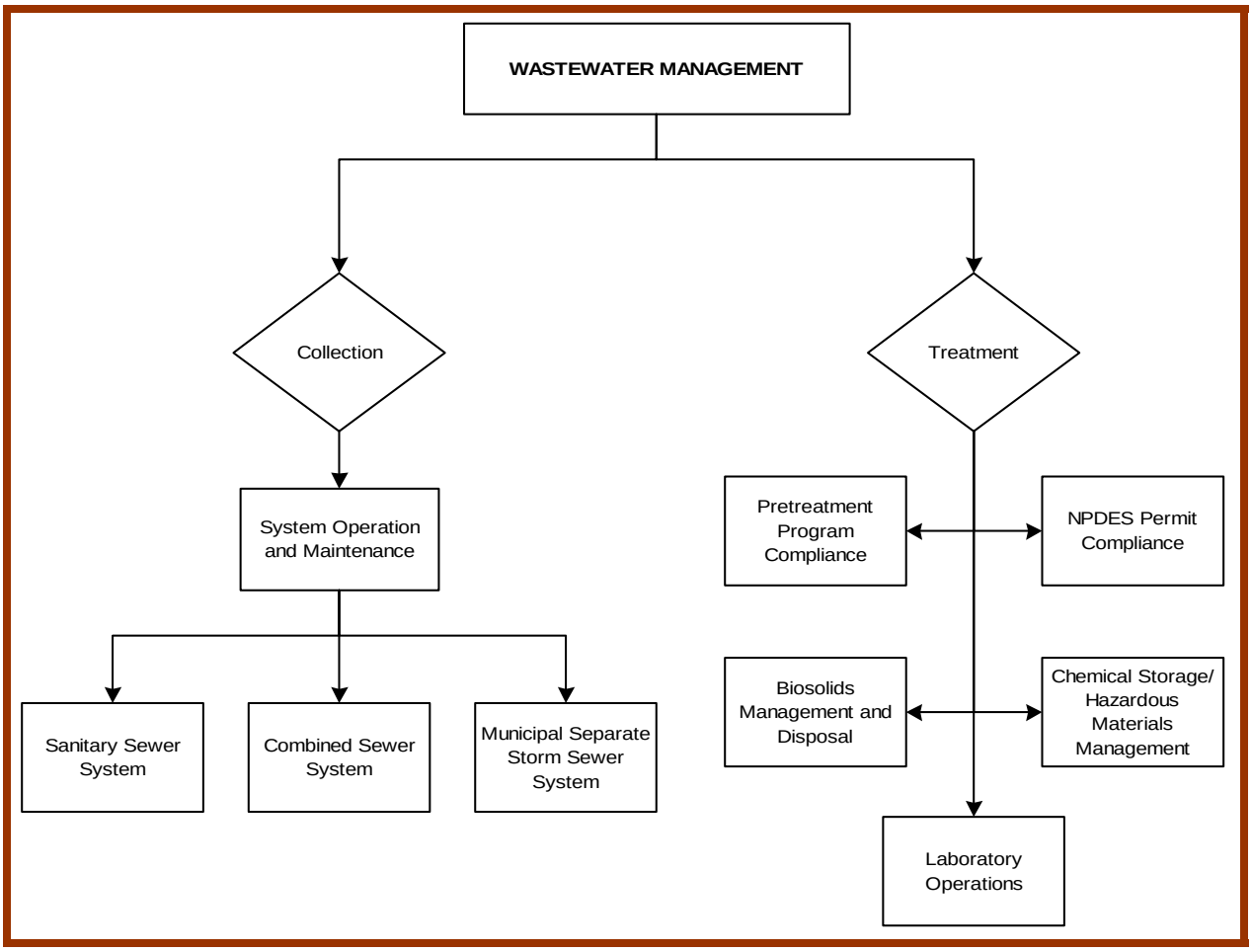
- Separate sewer systems that are designed to convey only municipal sanitary sewage and industrial wastewater.
- Combined sewer systems that are designed to convey storm water runoff in addition to municipal sewage and industrial wastewater.

A third type of conveyance system – a municipal separate storm sewer system (MS4) – conveys storm water runoff directly to nearby waters rather than to a POTW.

> EPA uses a broad definition of "**municipal**" to define municipal sewer systems – conveyances that are owned or operated by a state, city, town...or other public body having jurisdiction of disposal of sewage, industrial wastes, stormwater, or other wastes, including...an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA.

Overall, POTWs are responsible for collecting, treating, analyzing, and discharging wastewater received from separate sanitary or combined sewer systems, as well as for disposing of sewage sludge, or "biosolids," generated during the treatment process. A POTW must comply with its NPDES permit, including requirements for industrial pretreatment, compliance monitoring, and proper use or disposal of biosolids. A POTW is also responsible for laboratory operations, chemical storage and hazardous materials management, and vehicle and equipment maintenance. Exhibit 3-4 presents common wastewater management operations.

Exhibit 3-4. Wastewater Management



3.9.1 OPERATION AND MAINTENANCE OF SEWER SYSTEMS

A tribal government may be responsible for operating and maintaining three types of conveyance systems:

- Separate Sanitary Sewer Systems;
- Combined Sewer Systems; and
- Municipal Separate Storm Water Systems.

These systems may be regulated under the NPDES, pretreatment, or storm water provisions of the CWA and 40 CFR Section 122.26. EPA generally is the permitting authority when NPDES or other permits are required in Indian country under federal environmental laws.

3.9.1.1 SANITARY SEWER SYSTEMS

Some tribal governments design, construct, operate, and maintain sanitary sewer systems to convey wastewater from homes and businesses to wastewater treatment plants. Some tribal governments install new sewer lines, clean blocked lines, repair leaky lines, maintain root control, repair manholes, operate and maintain pump stations, and conduct all maintenance activities necessary to prevent overflows and ensure that wastewater is conveyed to the treatment plant. Other tribes contract with outside suppliers to utilize sewer systems already in place in neighboring governments.

Maintaining sanitary sewer systems is a significant responsibility for tribal governments. Leaks or the infiltration of wastewater into the sewer system can occur through cracks and improperly sealed pipe joints. Overall, this "infiltration and inflow" (I/I) raises the volume of wastewater in sewers and lowers system capacity. During significant rainfall events, the sewer system cannot carry the excess wastewater, and flooding can occur. Diluted and untreated sewage can back up through manholes and into basements, spill into storm drains and creeks, and wash up onto beaches. To ensure maximum system capacity and to prevent these "sanitary sewer overflows" (SSOs), tribal governments must undertake active monitoring and preventive maintenance programs to identify and repair leaky sewer lines, as well as conduct any major upgrades or restorations.

Sanitary sewer capacity is reduced by groundwater seepage through **leaky pipes and storm water flow,** through **leaky and missing manhole covers**, and **domestic and industrial roof drains**. While much of the leakage occurs in main trunk sewers, more than 50 percent of groundwater seepage in certain areas may come from holes in pipes on private property.

EPA's Sanitary Sewer Overflow Material is found at http://epa.gov/npdes/sso

Tribal governments that operate POTWs are required to report all overflows and flooding from either sanitary or combined sewage systems so that repairs can be made and preventive action can be taken, to minimize environmental and human health impacts.

SSOs, whether caused by excessive I/I, inadequate capacity, blockages, or equipment failure, impact the environment through the discharge of raw sanitary sewage. These discharges often result in direct human exposure to raw sewage, as well as surface and groundwater contamination. SSOs are unpermitted, illegal discharges under the CWA and may subject the tribal government to enforcement action by EPA or the tribal regulatory authority.

3.9.1.2 Combined Sewer Systems

> **EPA's CSO** Information is available at http://epa.gov/npdes/cso.

Although limited in number, some tribal governments maintain combined sewer systems (CSSs) that are designed to carry sanitary sewage, industrial wastewater and storm water runoff to the POTW. During periods of heavy rainfall or snowmelt, the wastewater volume in a CSS can exceed the capacity of the system. CSSs, therefore, are designed to overflow and discharge excess wastewater directly to nearby water bodies. These discharges are called combined sewer overflows (CSOs).

Tribes with CSSs have operation and maintenance responsibilities similar to those for separate sanitary sewer systems, such as installing new sewer lines, cleaning blocked lines, and inspecting for and fixing leaks and infiltration. However, their most important activity is controlling CSOs, which contain not only storm water, but also untreated human and industrial waste, toxic materials, and debris. EPA's Combined Sewer Overflows (CSOs) section on the NPDES page [http://cfpub.epa.gov/npdes/home.cfm?program_id=5] provides material on CSOs.

3.9.1.3 Municipal Separate Storm Sewer Systems

> EPA's Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s) Web site [http://cfpub.epa.gov/npdes/stormwater/munic.cfm] provides information on MS4s.

Although rare in Indian country, some tribal governments also are responsible for operating and maintaining municipal separate storm sewers (MS4s). MS4s are designed to convey storm water from impermeable areas to bodies of water. In conveying storm water directly to streams, rivers, and lakes, MS4s also transport oil, grease, pesticides, herbicides, dirt and grit, all of which have the potential to reduce water quality. Tribal government operations related to operating and maintaining storm sewer systems include clearing blocked sewer lines, preventing contaminants from entering the storm sewer system, constructing storm water controls, and sampling and analyzing storm water discharges. In addition, tribal governments can reduce the volume of silt and solids being transported to the sewer systems and reduce water contamination by cleaning streets, removing wastes, and cleaning sewer screens.

Medium and large MS4 operators are required to submit comprehensive permit applications and are issued individual permits. Regulated small MS4 operators have the option of choosing to be covered by an individual permit, a general permit, or a modified Phase I MS4 individual permit. Tribal governments responsible for operating and maintaining MS4s submit permit applications to EPA.

3.9.1.4 SEWER LINE REPAIR/REPLACEMENT

Separate, combined, and storm sewer systems require repair to eliminate conditions that impede their ability to convey sewage and storm water flows. Sewers and other collection system components, such as manholes, pump stations, and siphons, must be repaired or replaced to address structural failure, infiltration (leakage of groundwater into pipes), exfiltration (leakage of sewage out of pipes), and blockages. In combined sewers, flow regulators must be repaired when they fail to divert combined wastewater flows at the intended flow rates. Portions of a sewer system may need to be replaced to address inadequate capacity, which can result in separate sewer system overflows during periods of high flow. Repairs may involve replacing individual pipe sections, replacing entire sewer segments, or repairing existing sewers. Grouting leaking joints, lining existing sewers, and rebuilding or lining manholes and other structures all may be necessary.

Separate and combined sewer system repairs can impact the environment through the discharge of raw sewage around the line or system component being repaired. Repairs of separate, combined, and storm sewers also can affect the environment through erosion and sedimentation, which take place as a result of excavation, stockpiling, and backfilling, or through the discharge of sediment-laden water from the repair excavation. Guidance on sewer maintenance activities is often included in a tribal government POTW's NPDES permit.

3.9.2 WASTEWATER TREATMENT

Some tribal governments may be responsible for wastewater treatment. POTWs are responsible for the treatment, analysis, and discharge of wastewater received from sanitary or combined sewer systems, and the disposal of sludge generated from the treatment process.

Activities at a POTW may include:

- Operating and maintaining the plant to ensure that discharges meet the facility's NPDES permit requirements and limitations;
- Overseeing a pretreatment program to prevent industrial discharges from causing interference or pass through, sludge contamination, or the plant to violate its permit;
- Sampling and analyzing wastewater and sludge prior to discharge or disposal to meet NPDES monitoring requirements;

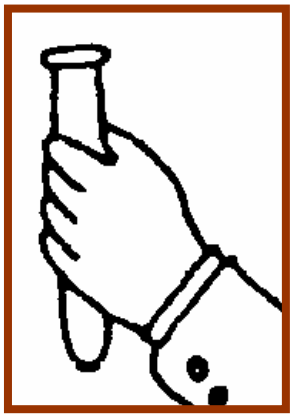
- Managing biosolids from the treatment processes by landfilling, land application, surface disposal, incineration, or composting; and
- Maintaining records and submitting discharge monitoring reports (DMRs).

Because these activities could affect the environment, they may be subject to environmental regulations as indicated in the following list:

- Wastewater treatment process – CWA;
- NPDES permit compliance – CWA;
- Wastewater treatment plant effluent injection - SDWA;
- Laboratory operations – CWA and RCRA;
- Pretreatment program – CWA;
- Biosolids management and disposal – CWA, RCRA, and CAA; and
- Chemical storage/hazardous materials management – EPCRA, CERCLA, and CAA

EPA's information on wastewater treatment plants is found at http://cfpub1.epa.gov/npdes/home.cfm?program_id=13.

3.9.2.1 Wastewater Treatment Process



Municipal wastewater (sewage) treatment is defined as primary, secondary, or tertiary according to the extent of pollutant removal and the mechanisms (physical, biological, or chemical) through which pollutants are removed. Primary treatment consists primarily of physical processes (settling or skimming) that remove a significant percentage of the organic and inorganic solids from wastewater. Secondary treatment depends on biological action to remove fine suspended solids, dispersed solids, and dissolved organics by volatilization, biodegradation, and incorporation into sludge. In addition, secondary treatment satisfies much of the oxygen demand of the pollutant(s). Tertiary (advanced) treatment uses a variety of biological, physical, and chemical treatment approaches to reduce nutrients, organics, and pathogens.

Tribes with wastewater treatment facilities may use "biogas," a product of anaerobic digestion, either offsite or within the plant to improve the energy efficiency of wastewater treatment processes. Biogas, a gas composed of methane, carbon dioxide, hydrogen sulfide, and other minor gaseous compounds, has about 60 percent of the heat value of natural gas. If the gas is not used, it can be flared, which may be regulated under the CAA.

3.9.2.2 NPDES PERMIT COMPLIANCE

Tribal governments with wastewater plant operations and/or a collection system (sanitary or combined) that conveys wastewater to a POTW are responsible for complying with applicable federal and tribal regulations. Proper operation and maintenance are critical for sewage collection and treatment because the environmental impacts from these processes can severely degrade water resources and, ultimately, human health. For these reasons, POTWs receive NPDES permits to ensure compliance with federal regulations.

EPA's NPDES Web site offers a wide array of material on this permit program. See [http://epa.gov/npdes]

NPDES permits, issued by EPA or an authorized tribal government, establish effluent limits, including type and quantity restrictions, and pollutant monitoring, recordkeeping, and reporting requirements. Each POTW (or other dischargers into surface water) that intends to discharge into the nation's waters must obtain an NPDES permit prior to initiating its discharge. To date, no tribe is authorized to issue NPDES permits.

To comply with the NPDES permit, tribal governments are responsible for implementing an NPDES monitoring program at their POTWs. To comply with the program, POTWs must collect samples of effluent discharges at the frequencies and locations specified in their permits and submit monitoring reports to EPA or a tribe that is authorized to administer the NPDES program. Sampling and analysis are conducted to verify that the amounts and types of pollutants discharged from wastewater treatment systems meet the NPDES permit limits. The NPDES permit specifies the parameters that must be monitored, which vary by plant. The primary parameters in NPDES permits for POTWs include flow, biochemical oxygen demand (BOD), pH, fecal coliform, residual chlorine, and suspended solids. A NPDES permit may include other parameters, such as bioassay toxicity tests and metals.

If a POTW meets the NPDES permit requirements, the systems usually are operating properly. Failure to comply with permit requirements can result in permit suspension, increased monitoring requirements, increased inspections, and/or issuance of fines or other penalties by EPA or the relevant tribal government regulatory agency.

3.9.2.3 LARGE CAPACITY SEPTIC SYSTEMS

> **EPA's Septic System** information is available at [http://epa.gov/owm/septic]

Some tribal facilities rely on on-site waste water treatment systems and large capacity septic systems to treat wastewater, facilities with on site systems may include casinos, housing clusters, schools and other public buildings, day care centers, gymnasiums, and shopping areas. A septic system is considered a Large Capacity Septic System (LCSS) if it receives solely sanitary waste either from multiple dwellings, or from a non-residential establishment, where the system has the total capacity to serve 20 or more persons per day. LCSSs are regulated as Class V wells under the federal Underground Injection Control (UIC) Program [http://www.epa.gov/safewater/uic/classv/class5_types_lcss.html]. Although LCSSs can be individually permitted, the majority of LCSSs, are "authorized by rule" provided they meet minimum federal requirements. "Authorized by rule," means that an individual permit is not required.

EPA does not have permit requirements for septic systems used by single-family homes or non-residential septic systems receiving solely sanitary waste that serve fewer than 20 persons per day. However, if these systems are improperly sited, operated or maintained they can threaten water quality. EPA has the authority to address malfunctioning systems on a case-by-case basis.

The minimum federal requirements for LCSSs are:

- The owner or operator is required to submit basic inventory information to EPA or tribe with primary control; and
- The injectate cannot endanger an underground source of drinking water (USDW).

Inventory information includes: facility name and location, owner/operator name and address, nature and type of injection well, and operating status. A complete discussion is found on EPA's Minimum Federal Requirements for Class V Wells page of the UIC Program Web site [http://www.epa.gov/safewater/uic/cl5oper/cl5minreq.html].

The second minimum federal requirement prohibits injection that allows the movement of fluids containing any contaminants (such as nutrients, pathogens, solvents or heavy metals) into an USDW if the presence of that contaminant may cause a violation of any primary drinking water regulation or adversely affect public health.

If the LCSS is designed, operated, and maintained properly, they generally should not endanger USDWs. To get more information on LCSS in your area contact your regional UIC program representative. See [http://www.epa.gov/safewater/uic/pdfs/rpt_uic_nationaldirectory2004v5.pdf].

3.9.2.4 Laboratory Operations

Some POTWs analyze wastewater samples and sludge at on-site laboratories. Laboratory procedures must comply with approved methods and meet NPDES monitoring requirements. Chemicals used in the laboratory include acids (*e.g.*, sulfuric, hydrochloric, nitric), bases (*e.g.*, sodium hydroxide, potassium hydroxide, sodium azide solution), and others (*e.g.*, chlorine, ferric salts, carbon disulfide, benzene). The quantity of wastes generated depends on the number and types of tests performed. The storage and disposal of some wastes generated from laboratory activities may be regulated under the hazardous waste provisions of RCRA.

POTWs are responsible for operating the wastewater laboratory safely. To prevent laboratory accidents, chemicals should be stored in a properly ventilated and well-lit room. All bottles and reagents should be clearly labeled and dated. Volatile liquids that can escape as a gas, such as ether, must be kept away from heat sources, sunlight, and electrical switches. Cylinders of gas being stored should also be capped and secured to prevent rolling or tipping.

3.9.2.5 Pretreatment Program

Under the pretreatment regulations (40 CFR 403), POTWs are required to develop and implement local pretreatment programs. Through this program, the POTW is directly responsible for the regulation of certain industrial users discharging to the wastewater treatment system. Information on pretreatment programs can be found at the Pretreatment Program section on the EPA's NPDES Web site [http://cfpub.epa.gov/npdes/home.cfm?program_id=3].

3.9.2.6 Biosolids Management and Disposal

Some tribal governments are responsible for managing and disposing of sewage sludge (*i.e.*, biosolids). Biosolids are a primary organic solid product produced by wastewater treatment processes that can be beneficially recycled (the fact that biosolids can be recycled does not preclude their disposal). These tribal governments must follow the federal sludge management program (40 CFR Part 503), which establishes requirements for the final use or disposal of biosolids when biosolids are:

Biosolids (or sewage sludge) are defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in treatment works. See [http://epa.gov/owm/mtb/biosolids/index.htm]

- Applied to land to condition the soil or fertilize crops or other vegetation grown in the soil;
- Placed on a surface disposal site for final disposal; or
- Fired in a biosolids incinerator.

A fourth disposal option is landfilling. If biosolids are placed in a municipal solid waste landfill, the landfill owner/operator is responsible for ensuring that the biosolids meet the provisions of 40 CFR Part 258.

3.9.2.7 CHEMICAL STORAGE/HAZARDOUS MATERIALS MANAGEMENT

> ***Is it a Regulated Chemical?*** Appendices A and B of 40 CFR Part 355 list EPCRA EHSs. 40 CFR Part 302 lists CERCLA hazardous substances.

If storing or using *specified amounts* of certain hazardous chemicals, a tribal government may be subject to planning and reporting requirements of EPCRA and Section 112(r) of the CAA. Hazardous chemicals may be used in various wastewater collection and treatment operations, such as disinfection as part of the treatment process, or cleaning and other maintenance activities. Specifically, chlorine and sulfur dioxide are commonly used in the disinfection (chlorination/dechlorination) process. Additional chemicals may be used in laboratory procedures to analyze wastewater samples. Facilities must generally submit hazardous chemical inventory and emergency release information as provided in RCRA, CAA, and EPCRA. See section 3.3.1 (Chemical Emergency Preparedness) and section 3.10.4.1 (Risk Management and Prevention Planning).

3.9.3 STORM WATER DISCHARGES

Some tribal governments have enacted storm water discharge programs. Storm water discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events. These discharges often contain pollutants in quantities that could adversely affect water quality. Many industrial/commercial storm water discharges are considered point sources and require an NPDES permit. The primary method to control storm water discharges is through the use of best management practices. Information on BMPs is found in section 3.7.4.1 and at http://epa.gov/npdes/stormwater.

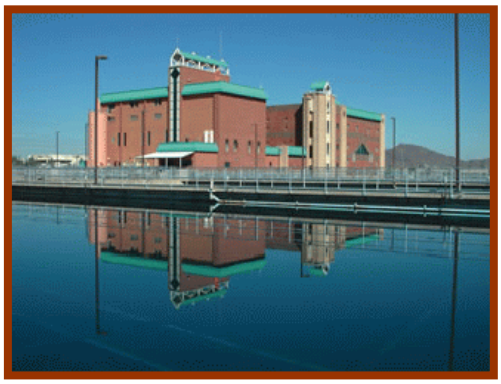
Polluted stormwater runoff is a leading cause of impairment to water bodies. Over land or via storm sewer systems, polluted runoff is discharged, often untreated, directly into local water bodies. When left uncontrolled, this water pollution can result in the destruction of fish, wildlife, and aquatic life habitat; a loss in aesthetic value; and

threats to public health due to contaminated food, drinking water supplies, and recreational waterways.

Under the CWA, the NPDES Stormwater Program is a comprehensive two-phased national program for addressing the non-agricultural sources of stormwater discharges, which adversely affect the quality of our nation's waters. The program uses the NPDES permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

As indicated in Section 3.6.2, Stormwater, the NPDES stormwater program requires operators of construction sites one acre or larger (including smaller sites that are part of a larger common plan of development) to obtain authorization to discharge stormwater under an NPDES construction stormwater permit. Tribal governments must apply if they meet either of the two parts of the stormwater regulation definitions of "operator."

3.9.4 Other Operations That May Be Regulated



In addition, POTWs may be regulated for pesticide management. POTWs may use pesticides, particularly herbicides, to control weed growth and maintain the plant site. Activities related to pesticide use and storage may be regulated under the provisions of FIFRA, EPCRA, or Section 112(r) of the CAA. See Section 3.10 for more information on pesticide management.

3.9.5 Pollution Prevention in Wastewater Management

A substantial amount of the pollution generated by wastewater management activities can be prevented. In preventing pollution, wastewater treatment plants can serve as role models for their residential, commercial, and industrial customers; they can also help or require dischargers to reduce their own toxic discharges to sewers through education, on site assistance, and regulatory programs.

3.9.5.1 Typical Wastes Generated

Sewer line and wastewater treatment operations and maintenance are key to ensuring proper treatment of wastewater and protection of the environment. Unintended releases of partially

treated or untreated sewage can result from leaks from pipes or sewers and inadvertent discharges to waterways.

The *wastewater treatment* process involves treating both the liquid and solid factions of wastewater. In doing so, various chemicals may be added to either the solids or the liquids to produce an appropriate product meeting discharge requirements. By products of the treatment process can include flared methane, bar screen waste, and grit chamber material.

3.9.5.2 Pollution Prevention Opportunities In Wastewater Management

Keep harmful chemicals out of the sewer lines and protect line workers, the plant, and the public's investment. Work closely with pollution prevention programs, economic development commissions, and pretreatment programs.

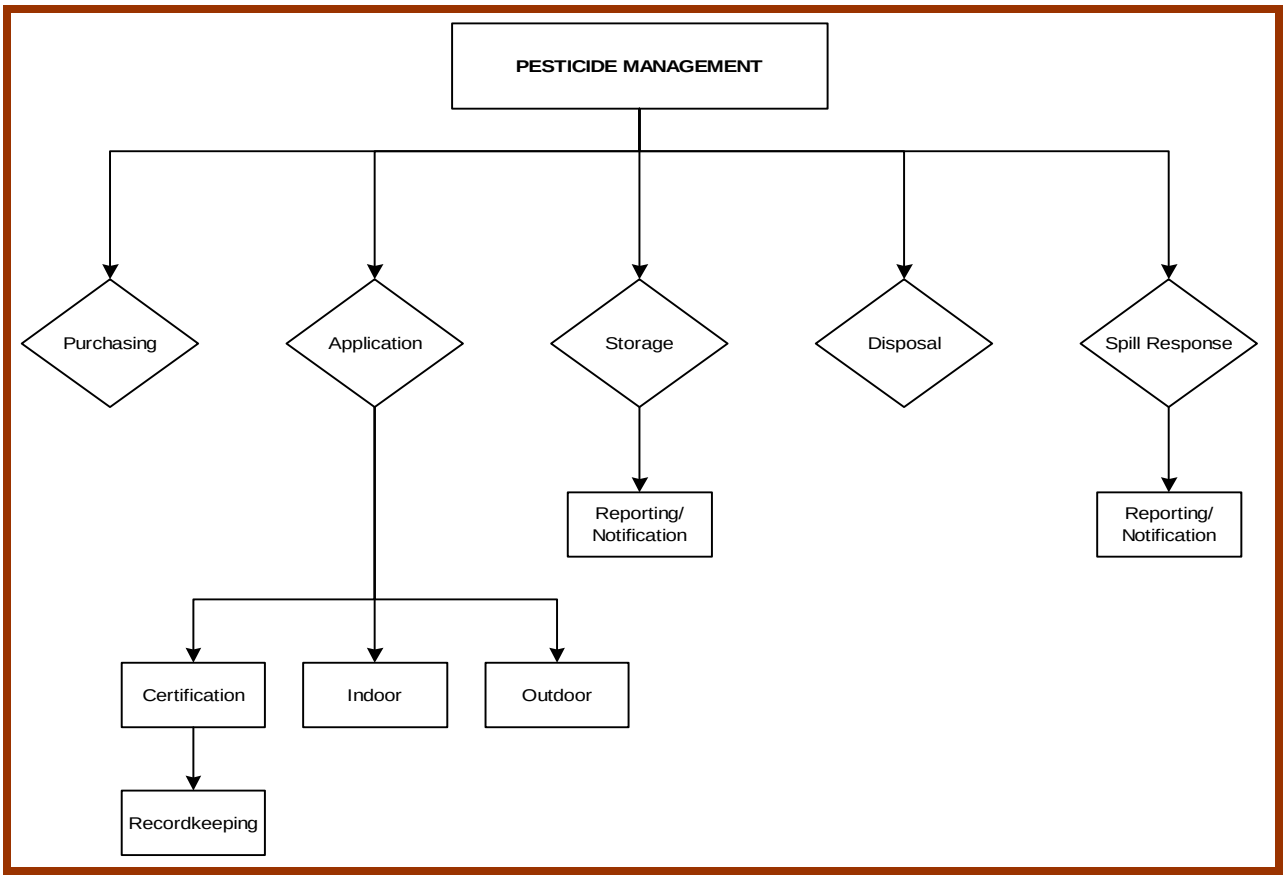
- Institutionalize a preventive maintenance program to predict problems before they occur instead of reacting to them after their occurrence.
- Design, implement, and evaluate sewage acceptance procedures, including provisions for spill prevention, discharge limitations, hauler performance guarantee, and enforcement or permit revocation.
- Explore, evaluate and implement alternatives to existing wastewater treatment processes, such as ultraviolet radiation or osmosis, to avoid using toxic chemicals such as chlorine and sodium hypochlorite.
- Reuse or recycle solids (*e.g.*, primary scum) and secondary screenings in areas such as landscaping. Check tribal regulations for any special requirements for disposal in Indian country and state and local regulations for any special requirements for disposal outside of Indian country.
- Post and track statistical control tools to inform all employees of the plants target operating level and the actual operating level.
- Establish a screening mechanism for procuring chemicals that evaluates non-toxic alternatives and reduces chemical dependence, thereby lowering hazardous waste use and avoiding hazardous waste generator status.
- Be innovative in use and reuse of energy, such as fuel cells operating from methane, participating in the United States Department of Energy's (DOE) Building Technologies Program, including using heating/air conditioning controls and room sensors in buildings. See [http://www.eere.energy.gov/buildings/program_areas/index.html].
- Use alternative transportation, such as bicycles, at the facility. Offer transit subsidies, telework, and flex-schedules for employees.

3.10 PESTICIDE MANAGEMENT

Some tribal governments may engage in pesticide management, which includes applying, storing, and disposing of pesticides. Exhibit 3-5 presents activities associated with pesticide management.

> EPA's Pesticide Web site [http://www.epa.gov/pesticides/] and **Tribal Pesticide Program** Web site [http://www.epa.gov/oppfead1/tribes/] provides information about EPA's **pesticide program. EPA's National Agriculture Compliance Assistance Center** Web site [http://www.epa.gov/agriculture/] is another useful resource.

Exhibit 3-5. Pesticide Management



Because these activities could affect human health and the environment, they may be subject to federal environmental laws and regulations, as indicated in the following list:

- Application – FIFRA, CWA and ESA;
- Storage – FIFRA, EPCRA, CERCLA, and CAA;

- Disposal – FIFRA, CWA, and RCRA; and
- Spill/Release Response – EPCRA, CERCLA, AND CAA.

Regardless of who is responsible for pesticide regulation, tribes should understand that misuse of a pesticide could cause damage to non-target species (*i.e.*, humans, pets, or other animals and plants). Pesticide labels, which describe when and under what conditions pesticides can be applied, mixed, stored, loaded, or used, should be followed strictly to prevent indoor pollution and potential hazards to humans and animals. In addition, federal labeling requirements establish worker protection standards, which include information on restricted entry intervals after pesticide usage and personal protective equipment requirements.

3.10.1 PURCHASING PESTICIDES

Purchasing includes the acquisition of pesticides and the equipment used to mix, load, and apply pesticides. Although these purchases are generally not regulated directly by federal environmental laws, purchasing decisions can impact the environment. Restricted use pesticides, which may be highly toxic, must only be purchased and used by applicators certified as competent to handle such pesticides. See Section 3.10.2.4 for information on restricted use pesticides.

The purchase of pesticides sold in returnable containers will eliminate a tribe's need to dispose of the containers, which could be a regulated hazardous waste under RCRA; by returning the containers to the dealer, tribes also reduce their environmental footprint and risk. In addition, a tribe may elect to purchase certain types of equipment that apply pesticides more efficiently, thereby conserving resources, and reducing the environmental impacts of pesticide application. Tribes also need to keep abreast of timetables for pesticides being phased out under re-registration actions.

3.10.2 APPLYING PESTICIDES

Pesticide application methods and practices depend largely upon the nature of the application. Pesticides may be applied indoors (*e.g.*, housing units, schools, other buildings) or outdoors (*e.g.*, solid waste management units, parks, aquatic uses, wetlands, open range, roadsides, right of ways, agriculture enterprises, recreational areas, and other tribal lands). Additionally, a wide range of household products contain pesticides, such as cockroach sprays and insect repellents, which can be applied without training as long as the label requirements are followed. However, "restricted use" pesticides can only be applied by certified individuals.

The hundreds of application methods available can be categorized into three major types:

- Sub-surface application methods, including injecting the pesticide into the ground to control subterranean insects (*i.e.*, termites, grubs, and nematodes) and other sub-surface methods, such as incorporating the pesticide into the soil;
- Surface applications, which include applying pesticides, repellants, disinfectants, or mildewcides directly to surfaces (*e.g.*, applications to floorboards, structures, animals or insects, crack/crevices); and
- Aerial application, including application via aircraft, back packs, and spray booms to apply pesticides to trees, row crops, and open range, or fumigants to control mosquitoes and wood-boring insects, such as termites.

Pesticides come in many forms, including gases, sprays, dusts, granulars, baits, and dips. Pesticide-related activities are primarily regulated under FIFRA, which requires that pesticide application occur in a manner consistent with product label instructions. All pesticide management operations must comply with federal pesticide use requirements unless EPA grants an emergency exemption from the requirements (40 CFR166). The application of pesticides may also be regulated under the CWA if the tribal government develops BMPs that are included in its stormwater or wastewater discharge permit.

3.10.2.1 APPLYING PESTICIDES INDOORS

Indoor pesticide application can occur in agricultural and non-agricultural areas and in any type of structural or industrial area requiring pest management, including grain silos. Applicators must follow label requirements for both general and restricted use pesticides. Applicators applying pesticides indoors must follow guidelines listed under 40 CFR 171, regulating the use of pesticides in, on, or around the following structures:

- Food-handling establishments;
- Human dwellings;
- Institutions (*e.g.*, schools, hospitals, offices, warehouses, public buildings); and
- Industrial establishments (*e.g.*, warehouses and grain elevators, and any other structures and adjacent areas, public or private).

The potential environmental impacts from indoor pesticide application are air pollution and exposure of people, non-target animals, and plants.

3.10.2.2 APPLYING PESTICIDES OUTDOORS

Tribal governments may be responsible for supervising the use of restricted pesticides in the following areas or during the following activities:

- Forests, nurseries, and forest seed producing areas;
- Commercial or private agriculture operations;
- Ornamental trees, shrubs, flowers, and turf producing areas;
- Livestock operations;
- Maintenance of roads, electric power lines, pipelines, railway rights-of-way, or other similar areas;
- Eradication of noxious weeds, mosquitos, other aquatic pests, and invasive species;
- Maintenance of irrigation canals; and
- Recreation or other outdoor areas.

Liquid spraying is one of the most common methods of applying pesticides to outdoor areas; it may be conducted by aerial spraying, tractor spraying, spray rigs, air blasters, hand spraying, or other liquid spray devices. The potential environmental impacts from outdoor pesticide application are human exposure and air, soil, and water contamination.

The application of certain pesticides may destroy or adversely affect endangered or threatened species of fish, wildlife, or plants, and their habitats. Tribal governments must comply with applicable requirements under the ESA. Tribal governments can work with EPA's Endangered Species Protection Program to learn more about the protection of endangered species from the use of pesticides.

Outdoor pesticide activities are regulated under the label requirements and application provisions of FIFRA. FIFRA also establishes worker protection standards designed to protect agricultural workers and pesticide handlers. These include posting warning signs in areas where pesticides have been applied, restricting entry intervals after pesticide usage, and requiring the use of personal protective equipment. See Section 3.10.4.

EPA's Endangered Species Protection Program Web site [http://www.epa.gov/espp/] provides more information on **species protected** from the dangers of pesticides.

3.10.2.3 Cleaning Application Equipment

While there is no way to completely remove all traces of a pesticide from application equipment, at the end of each application, several steps can be followed to protect the pesticide applicator, the environment, and to ensure that the equipment is left as clean as possible. The steps are:

- Read and follow all label directions to determine whether personal protection equipment is required and to determine how best to clean application equipment and dispose of rinsate (the washwater that contains small amounts of pesticide residue); and
- Ensure proper disposal of the rinsate.

Depending on the type of application equipment, the following steps should be considered and used:

- Rinse the inside and outside of the tank with clean water;
- Put in a moderate amount of clean water and spray it out. A small amount of liquid detergent added to the water will help clean the inside of the sprayer system;
- Clean the nozzles, nozzle screens, and suction screens with compressed air or a soft brush; and
- Closely monitor the activities of the pesticide applicator.

3.10.2.4 Certifying Applicators

Pesticide products are categorized as restricted, general use, or unclassified. A product is classified as a restricted use pesticide when the product meets certain criteria indicating that it poses a threat to humans, non-target organisms, or the environment, and labeling cannot sufficiently mitigate the hazard. For restricted use pesticides, special training in handling and applying the pesticide is necessary to ensure its safe use. Under FIFRA's regulations, the sale of restricted use pesticides is limited to certified applicators for use by those applicators or persons under their direct supervision. Applicators and supervisors of restricted use pesticides must be certified under Section 11 of FIFRA. Applicators who use restricted use pesticides must be certified to use pesticides by demonstrating competency in specified areas:

- Label and labeling comprehension;

- Safety techniques;
- Environmental awareness;
- Pest identification;
- Pesticide application;
- Equipment use;
- Application techniques; and
- Laws and regulations.

EPA's Restricted and Canceled Uses Web site [http://www.epa.gov/pesticides/regulating/restricted.htm] provides more information and a list of restricted use pesticides.

The use of unclassified products is not limited in any manner, except in cases where a product label limits the use to a specific group (*i.e.*, veterinarians).

3.10.2.5 KEEPING RECORDS

Tribal governments who use certified pesticide applicators must keep and maintain various restricted use pesticide records. The records must include the types, amounts, uses, dates, and places of application of all restricted use pesticides. Tribes should keep records of the pesticide application method and pounds of pesticides use per acre and per crop. The records should also include information on the weather conditions and soil moisture when application occurred.

3.10.3 WORKER PROTECTION

Pesticides are designed to (in most cases) kill pests. Many pesticides can also pose risks to people. EPA's Worker Protection Standard (WPS) are designed to protect agricultural workers from the effects of exposure to pesticides (40 CFR Part 170). The WPS standard is aimed at reducing the risk of pesticide poisonings and injuries among agricultural workers and handlers of agricultural pesticides. The WPS contains requirements for:

EPA's Worker Safety and Training Web site [http://www.epa.gov/pesticides/health/worker.htm] provides safety standards information and **EPA's WPS Training** site [http://www.epa.gov/oppfead1/safety/workers/training.htm] provides important training information.

- Pesticide safety training;
- Notification of pesticide applications;
- Use of personal protective equipment;
- Restricted entry intervals following pesticide application;
- Decontamination supplies; and
- Emergency medical assistance.

Training is essential for the proper use of pesticides and is key to the success of the WPS. To protect the health and safety of workers and handlers, employers are responsible for training them in the safe use of pesticides. Employers may either train their workers and handlers, or hire employees who have already been trained. Either way, employers must ensure that their employees understand the basic concepts of pesticide safety. Employees need to be trained by qualified trainers and must have the opportunity to ask questions during the training session.

3.10.4 STORING PESTICIDES

Tribal governments may be responsible for storing any unused or excess pesticides. The recommended procedures and criteria for proper storage apply to pesticides that are classified as highly toxic or moderately toxic and have DANGER, POISON, or WARNING written on their labels. FIFRA defines adequate storage as placing pesticides in proper containers and in safe areas to minimize the possibility of an accidental release that could result in adverse effects on the environment.

EPA's Pesticides, Storage, and Disposal information for tribe businesses, household consumers, farmers, and other users can be found at http://epa.gov/pesticides/regulating/storage.htm.

Storage sites should be in a dry, well ventilated, separate area where fire protection is provided and special safeguards are in effect. . Identification signs should be posted to provide notice of the contents and hazardous nature of the pesticide. Potential environmental impacts from pesticide storage are air, soil, and water contamination from accidental releases, as well as human and animal toxic exposure. Because pesticides are typically stored in large quantities for future use, accidental releases may be large and have immediate, serious, and detrimental effects on the surrounding environment.

Temporary storage of highly toxic or moderately toxic pesticides may occur at isolated sites and facilities where it is unlikely they will encounter conditions that may cause a release. Each container should be stored with the label plainly visible, and the container should be inspected for corrosion and leaks. If a tribe stores or uses specified amounts of certain pesticides, it may be subject to the planning and reporting requirements of EPCRA and Section 112(r) of the CAA. These requirements are described below.

3.10.4.1 Risk Management Planning (CAA Section 112(r))

Under Section 112(r) of the CAA, facilities that any of 140 regulated substances in a single process are required to develop risk management programs and to summarize these programs in risk management plans by June 21, 1999 (40 CFR Part 68). EPA will notify the public of risk management plans, which are intended to prevent accidental releases of regulated substances and to reduce the severity of those releases that do occur. At present, EPA implements CAA section 112(r) for Indian country and will continue to do so in areas where tribes are not authorized under the Tribal Air Rule. EPA has been working with industry groups to develop model risk management programs. To review the model program, refer to EPA's Chemical Accident Prevention and Risk Management Planning Web site [http://www.epa.gov/ebtpages/enviriskmanagement.html]. See Section 3.3.1 Chemical Emergency Preparedness and Prevention for additional information.

> At present, EPA has established a list of 140 regulated substances that fall under the Risk Management Planning regulations of the CAA. These substances were published in the *Federal Register* on January 31, 1994; EPA amended the list by rule, published on December 18, 1997. EPA may further amend the list in the future as needed.

3.10.4.2 Notification of a Canceled or Suspended Pesticide

Under FIFRA, EPA or a registrant can cancel or suspend the registration of a pesticide or withdraw authorization for a specific use of a pesticide. In such situations, EPA will request that all entities having supplies of that pesticide notify the Agency. If a tribal government has any canceled or suspended pesticides, it must notify the EPA of the amount. EPA will respond with specific directions concerning handling of the pesticide.

3.10.5 Disposing of Pesticides

Pesticide management includes the disposal of excess pesticides that cannot be stored for later use or are no longer needed. Pesticide disposal can involve incineration, chemical degradation, burial in a specially designated landfill, or well and soil injection. The potential environmental impacts from pesticide disposal are air, soil, and water contamination from releases and accidental exposure of humans and animals. The environmental implications are the same as for the application process, except that the concentration of the pesticide may be stronger because of the quantity and mass of the disposed pesticide. The disposal of pesticides is a critical process; if not properly conducted it can have immediate detrimental effects on the environment.

Pesticide labels outline proper disposal guidelines. FIFRA, RCRA, and the CWA all regulate these practices. Disposal activities may require notifying EPA or a local solid waste disposal facility (landfill or incinerator).

Before disposing of excess pesticide, the tribal government should consider two options:

- Store and reuse any leftover portion at the prescribed dosage rates; and
- Return any excess to the manufacturer or distributor for relabeling or reprocessing into other materials.

3.10.6 POLLUTION PREVENTION IN PESTICIDE MANAGEMENT

Reduction in the use of pesticides in tribal government operations can be achieved by using Integrated Pest Management (IPM). IPM utilizes regular monitoring to determine if and when treatments are needed. It employs physical, mechanical, cultural, biological, and educational practices to keep pest numbers low. Least-toxic pest control methods are used as a last resort. These alternative methods result in decreased use of pesticides.

Many of the tips listed in Section 3.10.6.2 may not initially appear to be related to pesticide pollution prevention. However, the use of the tips will result in lowered reliance on pesticides by making plants healthier, and healthy plants are better able to withstand pest invasions. Although IPM reduces reliance on pesticides, some pesticide use may still be necessary. In these cases, pesticides should be used properly and safely.

3.10.6.1 TYPICAL WASTES GENERATED

The following list presents typical waste generated during pesticide management and ways to handle them:

- Empty containers, including bags, drums, bottles, and cans. Containers should be triple rinsed or "jet rinsed" prior to disposal. Tripled rinsed containers should be crushed or punctured to prevent reuse. Containers can be reduced in quantity by buying in bulk; however, never buy more than is needed. When possible, purchase in recyclable containers that can be returned to dealers;
- Excess mixture (*i.e.*, the diluted pesticide left over in the spray tank). The best disposal method is to use it on a site;

- Excess product (*i.e.*, the unused pesticide no longer needed due to a change in procedures or because the pest problems are solved). The best disposal method is to find someone who can use it;
- Rinse water from containers and application equipment. This rinse water can be added to a tank and used; and
- Expired pesticides resulting from poor inventory management or from improper storage. Contact the vendor to inquire if the manufacturer will take back the product. If returns are not possible, the pesticides should be disposed properly and in a manner consistent with RCRA's hazardous waste provisions.

3.10.6.2 Top Pollution Prevention Opportunities

The following recommendations can help tribal governments achieve reductions in pesticide and herbicide applications and maintain regulatory compliance associated with chemical use, storage, and disposal.

- ***Design for water conservation.*** Group plants with similar water needs together so they can be irrigated together, and water will not be wasted on plants that do not need it. Proper watering will reduce stress on plants and allow their natural resistance to withstand pest attacks without the need for pesticides.
- ***Employ Environmental Landscape Management*** by selecting pest resistant plants, using sound planting techniques, and correctly manage the established landscape. Choose plants according to soil characteristics, rainfall, and sunlight conditions. See Section 3.6.9.2
- ***Avoid monocultures.*** Monocultures (single-species planting, such as large areas of grass) are very susceptible to infestation since most pests are host-specific. Growing different species together prevents pests from readily spreading.
- ***Reduce water runoff*** by building retaining walls, which direct water to a dry well or other areas to collect and percolate through soil. If pesticides are used, this will reduce the likelihood of contaminating nearby water bodies
- ***Use proper mowing practices.*** Mow grass with sharp blades. A dull blade rips grass making larger wounds and increasing susceptibility to disease pathogens. Sharp blades increase equipment efficiency and reduce wear on equipment. Never cut more than one-third the height of the grass at a single time.
- ***Scout the landscape regularly*** to learn which plants have problems. Most plants (except grass) seldom have more than one major pest problem. Scouting identifies problems early and facilities solving problems using IPM without resorting to pesticides.

- ***Use pesticides only when needed***, not on a prescribed schedule. Use spot treatment instead of treating the entire area.
- ***Correctly identify insects prior to treatment***. Less than 1 percent of all insects are harmful to plants. Take care not to harm beneficial insects.
- ***Use least toxic pest control methods***:
  - Horticultural oils;
  - Insecticidal soaps;
  - Natural enemies such as:
    - Pathogens, like as Bacillus thuringiensis, which infects and controls caterpillars;
    - Predators, such as purple martins, praying mantises, lady beetles, beneficial nematodes, and spiders;
    - Parasites, such as parasitic wasps;
    - Diatomaceous earth;
    - Boric acid;
    - Pyrethrins;
    - Insect growth regulators, which halt or interfere with the development of an insect before it matures;
    - Pheromones, which disrupt normal mating behavior by stimulating breeding pests and luring them into traps;
    - Insect traps; and
    - Mechanical treatments, such as cultivating to control weeds; hand picking of pests off plants, and sticky traps.
- ***Buy pesticides only in small quantities*** and store them carefully in labeled, airtight containers. Plan your purchases so pesticides do not expire.
- ***Understand that pest eradication*** is generally an unrealistic management objective. An attempt to totally eliminate a pest is likely to result in excessive pesticide application.
- ***Outsource pest control services*** and write IPM requirements into the specifications.
- ***Keep clutter, excess water sources*** (*e.g.*, drips or standing water in plants), ***and food waste minimized*** to discourage pests from entering buildings.

3.11 SOLID WASTE MANAGEMENT

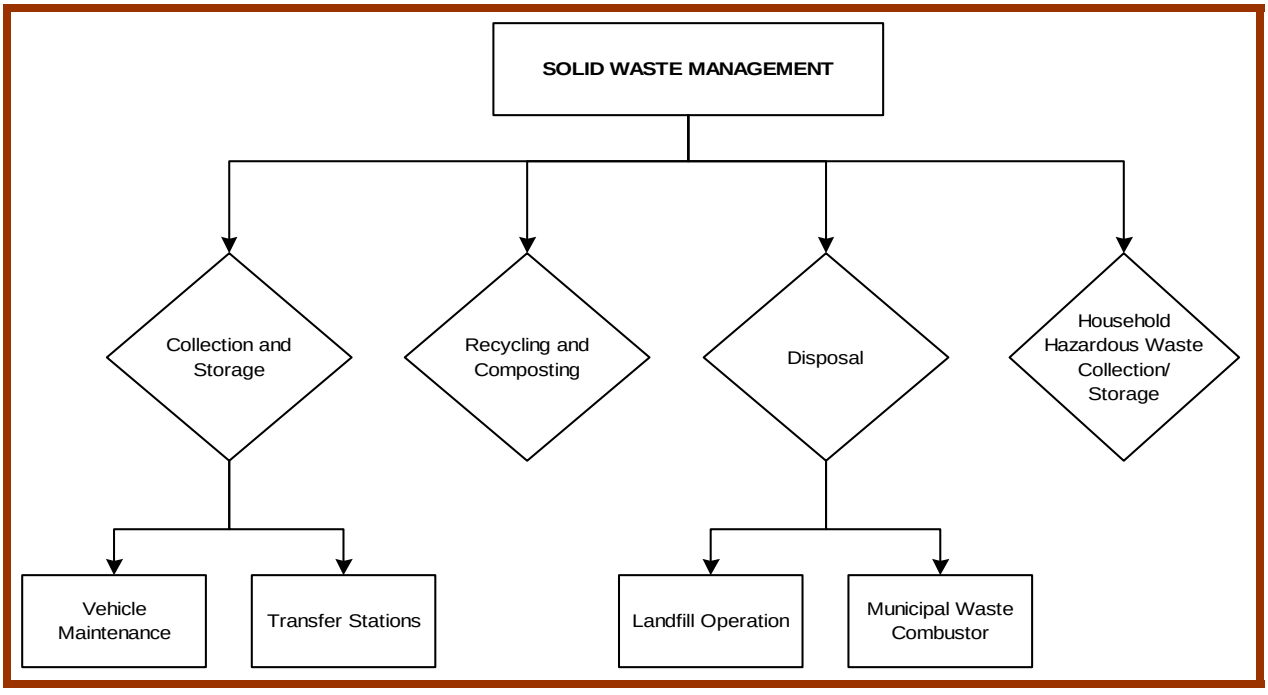
> EPA's Waste Management in Indian Country Web site [http://www.epa.gov/epaoswer/non-hw/tribal/index.htm] provides information about **EPA's tribal solid waste program**.

Tribal governments may engage in solid waste management within their jurisdiction. Some tribes conduct waste management operations (*e.g.*, waste collection and disposal) directly. Other tribes contract those services to private parties or enter into agreements with neighboring state or local governments. Proper management of solid waste is critical to public health and community resources. Exhibit 3-6 presents activities associated with solid waste management.

Because these activities could affect the environment, they may be subject to the following environmental regulations:

- Collection and storage – CWA;
- Composting – EPCRA, CERCLA, and CAA; and
- Disposal – RCRA, CWA, and CAA.

Exhibit 3-6. Solid Waste Management



3.11.1 INTEGRATED SOLID WASTE MANAGEMENT

Integrated solid waste management involves using a combination of techniques and programs to manage a community's waste stream. To account for the variations in waste streams between communities, tribal government planners can tailor integrated waste management systems to fit their specific local needs. EPA suggests using the following priorities – in order – as tools to help set goals for integrated waste management systems and meet specific tribal needs.

- Source reduction (waste minimization and prevention);
- Recycling; and
- Disposal.

Information on developing an integrated solid waste management plan (and many other waste issues) can be found at EPA's Waste Management in Indian Country Web site [http://www.epa.gov/tribalmsw/resource.htm].

Integrated solid waste management programs typically begin with waste audits – an assessment of the tribal waste stream.

3.11.1.1 WASTE AUDITS

A waste audit is a formal, structured process used to quantify the amount and types of waste generated by a tribal government, a tribal facility, or tribal members. A tribe's waste audits should assess and account for the amount of materials purchased, used, recycled, and disposed of. Information from audits will help identify current waste practices and how they can be improved. A waste audit includes four steps:

- Describing current purchases, use and disposal requirements and methods;
- Identifying amounts and types of materials generated, including those to target for source reduction;
- Estimating cost savings; and
- Implementing and monitoring the program.

Audits can be done on any type of waste (*e.g.* paper and office waste, municipal waste, commercial and industrial waste, construction and demolition waste). There are a number of different ways to conduct a waste audit, such as visual waste audits, waste characterization, and desktop audits. The type of audit used depends on the type of waste, where it is to be conducted

(tribal school, tribal housing, or other tribal facilities or operations), and what a tribe wants to get out of the audit. Audits help managers determine the most appropriate and effective source reduction programs for their community. Waste audits are a key to establishing waste and source reduction programs.

3.11.1.2 WASTE REDUCTION

Waste reduction, also known as source reduction or waste prevention, means using less material to get a job done. Waste prevention methods help create less waste in the first place – before recycling. Because it avoids recycling, composting, landfilling, and combustion, source reduction can help reduce waste disposal and handling costs. An example of source reduction is buying products that use less packaging (buy larger containers or refill containers with bulk purchases). It also conserves resources.

Tribal governments can establish waste reduction goals that require a percent reduction in the solid waste stream before a particular year. Tribes can also encourage programs that are directed at conserving resources and reducing solid waste generation, thereby helping to mitigate the burden of collection, processing, and disposal practices. There are many ways tribes can modify their current practices to reduce waste generation; potential activities include:

Incentives for Waste Reduction

"Unit pricing" and "pay as you throw" programs utilize economic incentives to create less waste. The programs charge for the collection of municipal solid waste – ordinary household trash – based on the amount thrown away. This creates a direct economic incentive to recycle more and to generate less waste. EPA's Pay As You Throw Web site [http://www.epa.gov/epaoswer/non-hw/payt/intro.htm] provides information about this program and links to related topics. Another method would be to provide a location for reuse (extra lumber, leftover paint, toys, windows).

Paper Products

- Reduce office paper waste;
- Use recycled paper, make double-sided copies;
- Replace hand towels and other disposables with hand dryers or cloth towel machines and reusable hardware.

Buildings, including Casinos

- Participate in an integrated waste management program;
- Replace disposable kitchenware with reusable cups, plates, knives and forks;
- Request used pallets;
- Install refillable shampoo and soap dispensers;
- Recycle bingo cards or purchase reusable ones;
- Use recycled plastic for benches, signs, and other fixtures;
- Explore collection and reuse of restaurant grease as biodiesel; and
- Develop compost programs and use mulch in landscaping.

3.11.2 Collecting and Storing Municipal Solid Waste

Solid waste management begins with the collection and storage of solid waste. Collection involves either picking up the waste at or near the point of generation (*e.g.*, curbside or backdoors) or gathering it from drop-off locations (such as community dumpsters or transfer stations). "Storage" of waste at an interim site, prior to recycling or final disposal, should be as brief as possible to discourage the formation of odors and the breeding of unwanted pests (*i.e.*, rats, flies).

RCRA defines **solid waste** as any garbage or refuse; sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. The main constituent of the latter group is municipal solid waste, which includes paper and paperboard, yard waste, wood, metal, glass, food waste, plastics, rubber, leather, textiles, household hazardous waste, and miscellaneous inorganic waste.

3.11.2.1 COLLECTION

Tribal governments use an array of methods to collect solid waste, including the following:

- Curbside or front yard collection, where containers are placed at the curb or front yard;
- Backyard collection, where containers are carried from backyards by collection crews; and
- Drop-off stations, where residents deliver solid waste to a specified site, such as a transfer station, local dumpster, or the disposal site itself.

Most activities undertaken during collection are not regulated by any particular federal environmental statute. Federal guidelines for the collection and storage of residential, commercial, and institutional solid waste are found at 40 CFR Part 243, but are not binding upon tribal governments. Of course, there may be tribal environmental or health codes that pertain to the collection of solid waste.

3.11.2.2 STORAGE/OPERATION OF TRANSFER STATIONS

Once the solid waste is collected, the tribal government or other collection entity may have to store the waste at an interim location prior to recycling or final disposal. If necessary, such storage usually occurs at a transfer station. A transfer station is a facility where wastes are transferred from smaller collection vehicles to larger transport vehicles, such as trucks, tractor-trailers, railroad gondola cars, or barges. These larger vehicles then transport the waste to its final destination.

Not all tribal governments have transfer stations. In small communities in which the nearest landfill is within 10 to 15 miles, compactor trucks take solid waste directly to the landfill. If stations are used, collection crews take waste to the transfer stations where it is weighed and either temporarily stored or moved directly into a larger vehicle.

These activities may impact the environment if waste is not contained and is carried away from the transfer station by wind or stormwater runoff. In addition to tribal building and health codes, the operation of transfer stations may be regulated under the tribal government's solid waste ordinance, as well as by any existing CWA NPDES stormwater or CSO permit conditions. Storage should be on a short-term basis only and should prevent the waste from being released to the environment. In some conditions, improper storage could be deemed disposal and could trigger more stringent regulation of the waste.

3.11.3 RECYCLING AND COMPOSTING

3.11.3.1 RECYCLING

> EPA's **Resource Conservation Challenge** Web site [http://www.epa.gov/epaoswer/osw/conserve/priorities/msw.htm] provides material on pollution prevention in construction and maintenance.

Recycling, the next level of the integrated solid waste management hierarchy, is the process by which materials are collected and used as raw materials for new products. Recycling includes collecting recyclable materials, separating materials by type, processing them into a form that can be sold as scrap material, and purchasing and using goods made with reprocessed materials. Recycling prevents potentially useful materials from being landfilled or combusted, and allows disposal capacity to be preserved, while saving energy and natural resources. Similarly, composting can play a key role in diverting organic waste away from disposal facilities.

By definition, recycling does not occur until someone transforms or remanufactures the material into a usable or marketable product or material. Tribes can locate markets for its recyclable materials or place that responsibility with the entity responsible for collecting recyclables. This process is similar to marketing any product or commodity and involves four distinct steps:

- Determining the possible uses of the end product;
- Identifying potential markets;
- Marketing the product; and
- Developing a collection and transfer system.

Recycling is best when it is as "clean" and separated as possible. In rural areas, recycling can be very successful when tribes use the process to make a final "product" that is then sold within the community. In more urban settings, tribes can participate in partnerships that accomplish recycling in the general scrap market, and do not necessarily lead to a single, identifiable product.

The major environmental impact associated with recycling is the volume of waste diverted (reduced) from landfills or incineration. This diversion extends the life of landfills and limits the volume of wastes being combusted. The most significant environmental impact from these activities is resource conservation; however, these activities can also significantly reduce criteria (*i.e.*, carbon monoxide, particulate matter) and toxic (*i.e.*, dioxin) air pollution.

Federal environmental statutes do not directly regulate the recycling of typical solid wastes (*e.g.*, paper, plastic, glass, aluminum). Used oil recycling, however, is regulated under 40 CFR Part

279, which establishes standards for used oil generators, collection centers, transporters and transfer facilities, processors and re-refiners, burners of off-specification used oil, used oil fuel marketers, the use of used oil as a dust suppressant, and used oil disposal. Used oil generated by households is exempt from these requirements but still is prohibited from being released into the environment.

Many tribal recycling ventures focus on collection in tribal government offices, as well as in business enterprises, including casinos and hotels, and homes on the reservation. These efforts are part of the tribes' integrated solid waste management plan and not only reduce waste and energy usage, but also provide an employment source. Tribal recycling programs can also cover non-members.

3.11.3.2 COMPOSTING

EPA's Composting information is available at [http://epa.gov/compost].

Composting is a process of aerobic biological decomposition of organic materials to produce a stable and usable organic topsoil that does not require disposal. Resources used to create the final compost product originate from the roughly 25 percent of the municipal solid waste stream that is organic material (*i.e.*, food waste/scraps, yard and lawn clippings). If paper waste is included, almost 60 percent of the municipal solid waste can be composted. EPA's Composting Web site [http://www.epa.gov/msw/compost.htm] provides useful information.

Three primary activities are associated with composting:

- Collecting/receiving wastes for composting;
- Processing the wastes (*e.g.*, decomposition); and
- Marketing.

Tribal governments can collect or receive wastes for composting from a variety of sources, including tribal business ventures, including casinos, hotels, and schools. Tribal governments may have active yard waste collection programs, complete with trucks that vacuum up leaves. Other tribes may have separate yard waste pickup as a part of recycling programs or drop-off stations for yard wastes. Significant composting wastes also result from recyclable material separation and processing. Once recyclable materials are removed from the solid waste stream, the remaining wastes may be suitable for composting. For example, one southern tribe composts nearly 1,200 pounds of food waste per day from its casino and restaurants. The tribe distributes the final product to landscapers, nurseries, and homes both on and off the reservation.

During the processing or decomposition stage of composting, the tribal government may need to adjust the physical and chemical properties of the waste to make it more amenable to composting. For example, it may shred or grind the waste into a smaller particle size, alter the carbon-to-nitrogen ratio, or add water to the waste. All of these activities are designed to facilitate decomposition. Depending on the types and amounts used, chemicals added to alter the properties of the composted waste may be regulated under EPCRA, FIFRA, or Section 112(r) of the CAA (risk management plans). Composting that occurs outside may create nuisance odors. Tribal ordinances may address odor problems.

A key aspect of composting programs is the concept of biosolids recycling. Sewage sludge biosolids are solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a wastewater treatment plant. The requirements for land application of biosolids at 40 CFR Part 503 pertain to materials derived from biosolids (*e.g.*, biosolids that have undergone a change in quality through treatment, such as composting, or by mixing with other materials, such as wood chips, municipal solid waste, or yard waste). These regulations specify pollutant limits, management practices, operating standards, monitoring requirements, and recordkeeping and reporting requirements.

Composting of household organic materials is not regulated by any major federal statutes. Tribes can establish composting programs or ordinances. Composting is encouraged if tribes create markets for the compost by using it in landscaping or specifying its use at tribal facilities. Composting can also address odor problems and promote best management practices that minimize fire risks.

3.11.4 Disposal Through Landfilling and Waste Combustion

3.11.4.1 Disposal

Tribal governments may dispose of solid waste that is not recyclable, compostable, or considered household hazardous waste. The two primary types of disposal practices are landfilling and municipal waste combustion (incineration), which may employ conventional techniques or a "waste-to-energy" approach.

Landfilling and waste combustion provide the last level of the solid waste management hierarchy because they manage waste that cannot be reduced or recycled. Some tribes might choose landfilling as their principal method of managing waste, while other tribes may choose to send their waste to a municipal waste combustor. Disposal decisions are made based on a variety of factors, including cost, land availability, population characteristics, and proximity to waterbodies.

3.11.4.2 LANDFILL OPERATION

Some tribal governments own and operate solid waste landfills for final disposal of the municipal solid waste generated within their jurisdictions; other tribes manage waste for surrounding jurisdictions. Solid waste landfills provide an engineered facility for the long-term containment of solid waste and involve the following activities:

> EPA's MSW Disposal Web site [http://www.epa.gov/epaoswer/non-hw/muncpl/disposal.htm] provides information on solid waste landfills and solid waste combustion and incineration facilities.

- Receiving and depositing solid waste into the landfill;
- Controlling disease vector (pest) populations;
- Managing/monitoring landfill gas production, leachate, and stormwater; and
- Recordkeeping.

Most landfills include a large disposal area that contains numerous smaller cells. Solid waste is deposited in these cells daily, compacted using specially designed bulldozers, and then generally covered with either a thin layer of soil or some alternative cover. The landfill owner and operator should control the flow of solid waste into the facility to exclude materials such as hazardous waste or other materials that should be managed elsewhere or could be recycled to make the landfill safer and preserve capacity. Once a cell is full, it is covered with a final cover designed to limit infiltration and pest populations, as well as to provide a base for subsequently placing and growing vegetation on the landfill.

Landfill operations are subject to the minimum criteria for municipal solid waste landfills found at 40 CFR Part 258. These criteria address location restrictions, operating criteria, design criteria, groundwater monitoring and corrective action requirements, closure and post-closure care requirements, and financial assurance criteria. If a municipal solid waste landfill subject to

this rule does not meet the requirements, it is considered an open dump, which is prohibited under Section 4005 of RCRA.

Under the CAA, landfills are subject to air emission guidelines (40 CFR Part 60.30c) and a NESHAP for emissions from landfills (40 CFR Part 63 Subpart AAAA). In addition, landfills may be regulated under prevention of significant deterioration (PSD), nonattainment area provisions, and new source performance standards (NSPS) programs.

Landfills do have drawbacks, such as the fact that they eventually leak and can cause environmental hazards and public nuisances (*e.g.*, odors and pests). Successful maintenance and landfill operation requires continuous budgeting for leak repair and general upkeep, and for eventual closure.

Tribal governments must monitor groundwater in close proximity to a tribally run landfill. They may also be required to employ a series of wells and pipes to extract the landfill gas that is created as solid waste decomposes in a landfill. This gas consists of about 50 percent methane (CH_4), the primary component of natural gas, about 50 percent carbon dioxide (CO_2), and a small amount of non-methane organic compounds. Instead of allowing landfill gas to escape into the air, it can be captured, converted, and used as an energy source. Using landfill gas helps to reduce odors and other hazards associated with these gas emissions, and it helps prevent methane from migrating into the atmosphere and contributing to local smog and global climate change. Stormwater runoff associated with landfills may be regulated under the CWA stormwater provisions.

3.11.4.3 MUNICIPAL WASTE COMBUSTION – SPECIFICALLY DESIGNED COMBUSTION FACILITIES

An alternative method to managing solid waste is combustion, which involves the incineration of all or a portion of the solid waste stream. Combustion should take place in specially designed solid waste combustion facilities and residual ash should be disposed in a landfill which may be a hazardous waste landfill depending upon the composition of the ash.

When choosing to use municipal combustion, tribal governments can retrofit existing facilities, build new facilities, or enter into partnerships with other tribes or state and local governments. If a new facility is built, the builder must site, design (incorporating elaborate air pollution controls), permit, and construct the combustion facility. Once a combustion facility is in place, the tribal government must ensure its proper operation, provide a relatively constant flow of waste as a feed stream,

and manage and dispose of the residual ash. Most new incinerators have the capacity to recover and reuse the energy released during combustion (the "waste-to-energy" process).

Municipal waste combustion is regulated primarily under the CAA (40 CFR Part 60), which establishes guidelines and standards of performance for both large and small municipal waste combustors, as well as standards of performance for incinerators. Regulations under RCRA would only apply if the facility receives and burns hazardous waste. Other CAA regulatory programs to which combustion may be subject are PSD, nonattainment provisions, NESHAPs, and NSPS.

The disposal of residual ash from the combustion of municipal waste, including fly ash and bottom ash, is regulated under RCRA and the law where disposal will take place. Generally, these two types of ash are combined and then disposed of either at a municipal landfill or a special ash landfill. Under RCRA, each facility must determine whether the combined ash constitutes a hazardous waste and, if so, the ash must be managed as a hazardous waste. If the ash is not a hazardous waste, it can be managed under tribal or state law, which may allow disposal in a solid waste landfill or provide for disposal in an ash monofill (or impose other special requirements).

Certain forms of combustion and burning such as bonfires and backyard burning should not be used as they put toxic substance into the air. They also may violate certain provisions of the CAA.

3.11.4.4 Municipal Waste Combustion – Backyard Burning

Burning of household waste is a long-standing practice in many rural areas, including Indian country and Alaskan Native villages. New research, however, shows that it is a major source of toxic emissions, including dioxin, sulfur dioxide, lead, and mercury, that damage both human health and the environment. Open burning of household waste creates significant amounts of dioxins due to the low combustion temperatures, poor air distribution, and the presence of chlorine, which is found in almost all household waste components. Backyard burning of household waste is one of the largest known sources of dioxin in the nation.

Controlling backyard burning and reducing combustion-related toxic emissions is particularly important to tribes and tribal members. Toxic emissions from backyard burning accumulate in the food chain by settling on feed crops, which are then eaten by

domestic meat and dairy animals. These pollutants also accumulate in the fats of animals, and then in tribal members when meat, fish, and dairy products are consumed. In addition, toxic emissions can cause immediate and long-term damage to the lungs, nervous system, kidneys, or liver, especially in children, the elderly, and those with preexisting respiratory conditions. Finally, ash from backyard burning also is likely to contain toxic pollutants, such as mercury, lead, chromium, and arsenic, which can contaminate vegetables if scattered in gardens. Children can also accidentally swallow contaminated dirt on their hands while playing near discarded ash.

More information can be found at EPA's Backyard Burning site [http://www.epa.gov/msw/backyard/].

Tribes can regulate tribal member backyard burning by establishing and enforcing regulations and ordinances. EPA, on the other hand, does not generally regulated residential backyard burning. While tribal regulation may be available, providing and promoting safer waste management alternatives is essential to reducing backyard burning. Tribes can educate tribal members about the health and environmental dangers of backyard burning. Tribes can also promote alternatives to leaf, brush, and trash burning by establishing solid waste collection programs and encouraging tribal members to compost and reduce, reuse, and recycle.

3.11.5 Household Hazardous Waste Collection and Storage

Tribal governments may sponsor basic household hazardous waste collection programs. These programs may be single-day or continuous events that provide for the safe collection, identification, sorting, storage, and disposal or reuse of household hazardous waste. Such programs may be operated by the tribal government or administered under a contract with a waste management firm. The materials collected during a household hazardous waste collection program may be recycled (*e.g.*, used oil), used as a waste fuel (*e.g.*, solvents), or disposed of properly at hazardous waste facilities.

Common Household Hazardous Wastes include: oil-based paint and varnish, paint and varnish remover, pesticides, insecticides, herbicides, motor oil, brake fluid, fuels, antifreeze, oven cleaners, drain cleaners, bleach, solvents, pool chemicals, mothballs, dye, nail polish, photo chemicals, toilet cleaners, fertilizer, metal polish, floor cleaners, wood strippers, muriatic acid, creosote, sealants, and both household and automotive batteries. See [http://epa.gov/msw/hhw.htm]

Household hazardous waste poses an environmental and health risk when managed improperly. These products may contain toxic substances that can be released when they are poured down the sink, sewer, onto the ground, or when they are landfilled or incinerated. The dangers of such disposal methods may not be immediately obvious, but certain types of household hazardous waste have the potential to cause physical injury to sanitation workers; contaminate septic tanks

or wastewater treatment systems if poured down drains or toilets; and present hazards to children and pets if left around the house. Thus, many tribal governments have established household hazardous waste collection, storage, and disposal programs.

Under federal regulation, the collection, transportation, storage, treatment, and disposal of household hazardous waste are exempt from the regulations applicable to commercial hazardous waste. In addition, resource recovery facilities that manage municipal solid waste are not subject to hazardous waste regulations (with the exception of ash that exhibits a hazardous characteristic, such as toxicity) if they meet specified conditions. Tribes may develop laws that regulate the disposal of household hazardous waste, including requiring the separation of waste streams.

3.11.6 Partnership in Solid Waste Management

Many tribal governments partner with other tribes, as well as state and local governments to manage solid waste. These partnerships help tribes supplement and combine resources to effectively establish, manage, and maintain municipal solid waste management projects. Partnerships offer a variety of benefits, including:

- Implementation of projects that otherwise might be too costly to an individual tribe;
- Pooling of financial and administrative resources for purchase of equipment and machinery;
- Opening up a variety of waste management opportunities to promote health and safety on the reservation;
- Reduction of capital costs associated with recycling centers, landfills, and storage facilities;
- Job creation for tribal members that participate in the partnership; and
- Increase in ability to comply with all applicable regulations.

Tribes interested in partnerships should contact EPA or contact other tribes directly.

3.11.7 Hazardous and Non-Typical Waste

Hazardous waste, including industrial wastes and toxic chemical waste, is governed by RCRA standards (40 CFR Parts 264 and 265). Tribes cannot be authorized by the EPA to administer and enforce a hazardous waste program under RCRA. Several tribes do, however, partner with EPA, states and local governments to provide hazardous waste clean up and storage services.

In Indian country, generally EPA issues permits to facilities that treat, store, and dispose of hazardous waste under RCRA. Permits for Treatment Storage and Disposal (TSD) facilities are designed to control the operations at the facility, and include requirements for:

- Site security, personnel training, and emergency procedures;
- Waste analysis, handling and recordkeeping;
- Technical standards for tanks, containers, impoundments, and other units;
- Financial assurance;
- Groundwater monitoring; and
- Closure.

TSD facilities are designed to protect soil, groundwater, and air resources by establishing minimum management standards and precautions. An EPA training module on RCRA Treatment, Storage, and Disposal Facilities (TSDFs) [http://www.epa.gov/epaoswer/hotline/training/tsdf05.pdf] provides an introduction to the TSDF standards in 40 CFR part 264/265, Subparts A through E.

3.11.8 Other Operations That May Be Regulated

Another operation associated with solid waste management is pesticide application. Pesticides may be used in solid waste management activities to control weed growth and control disease vectors. Activities related to pesticide use and storage may be regulated under the provisions of FIFRA, EPCRA, or CAA Section 112(r). Section 3.10 provides information on pesticide management.

3.11.9 Pollution Prevention in Solid Waste Management Operations

Numerous opportunities exist for pollution prevention in solid waste management operations. As the lead department for "putting waste in its place," tribal solid waste departments can show their commitment to waste reduction by ensuring that their operations prevent pollution and comply with the applicable environmental regulations. Solid waste managers engage in a range of activities, most with the potential to cause pollution. These can generally be categorized as follows:

EPA's National Waste Minimization Program provides information on ways to promote waste reduction. See http://epa.gov/wastemin

- Source reduction;
- Collection and storage;

- Processing – recycling and composting;
- Disposal; and
- Household hazardous waste.

With the exception of source reduction, each category generates wastes as described below.

3.11.9.1 Typical Wastes Generated

Curbside *collection* or drop off facilities are provided for solid waste and recyclables, and other materials and special wastes. Key wastes generated by collection operations include used motor oil and filters, antifreeze, batteries, parts washer solvent, used hydraulic oil, tires, used vehicles and vehicle parts, and air emissions.

The *processing* of recyclables at material recovery facilities, solid waste at transfer stations, and yard waste at compost sites, often generates waste. Key wastes include dust from compost sites, hydraulic oil, site runoff, recycling residues, electrical transformers, and spilled fuels.

Waste *disposal* includes landfill and waste-to-energy facility operations. Key landfill wastes include leachate and air emissions. Key waste-to-energy facility wastes include bottom ash, fly ash, bulky materials, air pollution control residues, air emissions, and wastewater.

Tribal governments that operate household hazardous waste collection operations typically assume generator status for household materials upon acceptance at the collection point. Problematic wastes include PCBs and mercury from fluorescent ballasts and lights, paints, and computer monitors.

3.11.9.2 Top Pollution Prevention Opportunities

Overall

Perform a waste audit - understand the waste stream in order to identify high priority items for source reduction and reuse (*e.g.*, textiles, yard waste, construction and demolition material).

Collection

- Establish a "take back" program with motor oil suppliers to provide re-refined oil;
- Use in-line oil filters to reduce frequency of oil filter disposal;
- Capture and recycle on site spent antifreeze;
- Convert parts washer to aqueous-based systems or biodegradable solvents;
- Convert fleet to natural gas as feasible;
- Maximize collection efficiency (minimize trips) by using route management software and multi-purpose vehicles;
- Recycle tires and utilize retread tires where appropriate;
- Specify tires for maximum durability; and
- Replace mercury thermometers in clinics and/or provide thermometer exchange for residents.

Processing

- Establish a preventative maintenance program for all major pieces of equipment to minimize potential fluid discharges.
- Capture and recycle spilled hydraulic oil using oil absorbent material.
- Minimize recycling residues through on-going education of customers, limits on compaction equipment, and employee training.
- Maximize acceptability of compost products by minimizing heavy metal content of source materials, including pretreatment requirements for industrial contributors and increased frequency of street sweepings.

Disposal

- Minimize landfill site runoff by capturing and recirculating leachate and developing effective stormwater management plans.
- Capture and reuse methane gas generated at landfill sites.
- Minimize hazardous nature of incinerator ash by implementing battery recycling and household hazardous waste collection programs.

Household Hazardous Waste

Educate household hazardous waste participants to "use it up," provide a waste exchange for unopened materials, and bulk containerize latex paint for reuse or resale.

Other

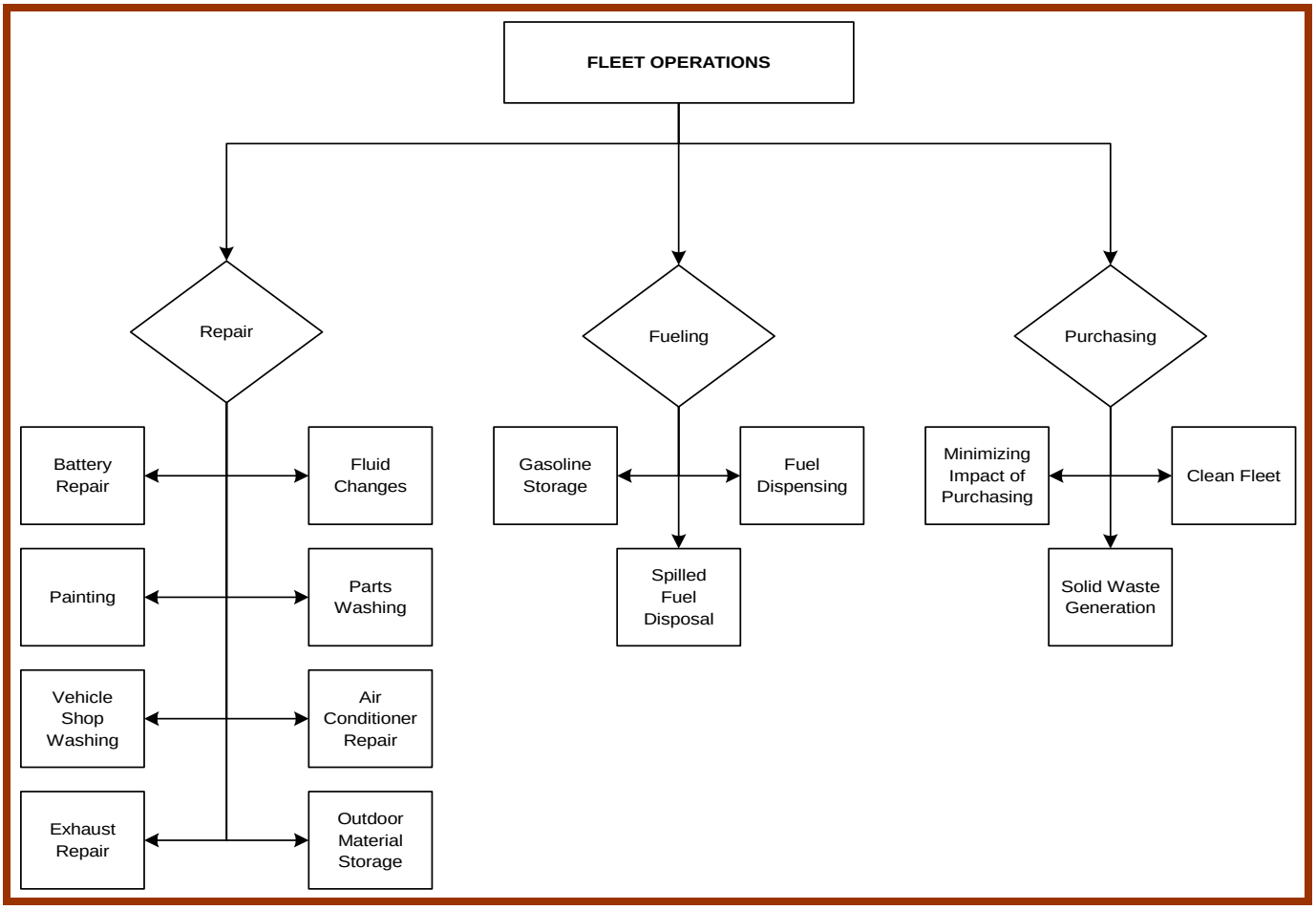
- Establish a preventative maintenance program for electrical equipment and require equipment vendors to take back all devices with mercury switches or PCB transformers;
- Replace USTs with above ground tanks with proper containment systems; and
- Minimize pesticide usage through litter prevention, site management, and integreated pest management programs.

3.12 VEHICLE/EQUIPMENT MAINTENANCE

Tribal governments may operate, maintain, and purchase motor vehicles and equipment to perform government services. Vehicles range from school buses, fire engines, snowplows, and heavy construction equipment to automobiles used by police and fire departments and government officials. Equipment may include pumps, tools, and boilers. Exhibit 3-7 shows the different types of fleet operations, including vehicle repair shops, fueling stations, and purchasing operations.

The **National Automotive Environmental Compliance Assistance Center** [http://www.ccar-greenlink.org/] provides information about maintenance and compliance.

Exhibit 3-7. Vehicle Fleet Activities



3.12.1 VEHICLE REPAIR SHOPS

Vehicle repair shops conduct several activities that could affect the environment; these activities may be regulated under the following federal environmental laws:

- Fluid changes – RCRA, SDWA, and CWA;
- Parts washing – RCRA, CAA, and CWA;
- Battery maintenance – RCRA and CWA;
- Air conditioner repair – CAA;
- Vehicle and shop floor washing – CWA;
- Exhaust system repair and replacement – CAA;
- Painting – RCRA and CAA; and
- Outdoor material storage – CWA and RCRA.

Exhibit 3-8 illustrates some typical auto shop activities and provides an illustration of activities that are not in compliance.

Exhibit 3-8. Repair Shop Activities

3.12.1.1 CHANGING VEHICLE FLUIDS

Changing vehicle fluids includes oil, transmission, and break lubrication, as well as antifreeze. Changing fluids also involves storing both new and waste fluids and managing or disposing of waste fluids. Fluids generally are drained from the vehicle to a pan or bucket placed below the vehicle. Full pans or buckets are then dumped into a larger container, such as a 55-gallon drum, UST, or AST, prior to off-site disposal. The potential environmental impacts from fluid changes are soil and water contamination from spills or improper disposal. Disposal of these fluids by infiltration through shallow disposal systems is prohibited by the SDWA's Class V rule.

Storage of new materials may be regulated under the SPCC provisions of the CWA, which require development of a spill prevention plan that generally includes a requirement to provide secondary containment for all tanks and drums. Storage, recycling, and disposal of waste fluids are regulated under the used oil provisions of RCRA. The used oil provisions require used oil to be stored in structurally sound containers labeled with the words "used oil only" and ultimately

recycled or burned for heat. Fluids disposed of or spilled in floor drains or surface drains or otherwise released from the facility property are regulated under the NPDES, pretreatment, or stormwater provisions of the CWA. These provisions require notifying EPA or the treatment plant about oil spills, complying with permit provisions, and preventing untreated fluids from reaching surface waters. Fluids stored in underground tanks are regulated under the UST provisions of RCRA, which require that the tanks maintain spill prevention and leak detection devices and be made of specified structurally sound materials.

3.12.1.2 Washing Vehicle Parts

Washing vehicle parts consists of immersing the small parts, such as nuts, bolts, or carburetor pieces, into a solvent bath of chemical or water-based solvent or spraying them with a chemical or citrus-based solvent. Washing vehicle parts also may include spraying shop rags with solvent and rubbing the solvent on the part to clean it. Chemical solvent washers often consist of a metal sink attached to a 20-gallon drum of solvent. When the solvent is no longer usable, the drum is replaced. Water-based solvent washers consist of an enclosed bath with high-pressure sprayers. The use of chemical solvent washers is regulated under the cold solvent bath section of the CAA, which requires sink lids to be kept closed and specifies additional practices to minimize the release of hazardous air pollutants. The disposal and recycling of used chemical solvent are regulated under RCRA, which specifies disposal methods. The disposal of wastewater from water-based solvent washers is prohibited from injection under the SDWA and may be regulated under the pretreatment program or NPDES programs of the CWA. The disposal of solvent-contaminated rags may be regulated under RCRA.

3.12.1.3 Maintaining Vehicle Batteries

Maintaining vehicle batteries includes testing, changing, storing, and disposing of new and used vehicle batteries. The storage of batteries may be regulated under the NPDES stormwater provisions of the CWA, which require that batteries be contained and covered to prevent potential leaks from coming in contact with stormwater. Disposal of batteries may be regulated under RCRA, which requires that batteries either be returned to a supplier or recycler or meet stringent disposal requirements.

3.12.1.4 Repairing Air Conditioners

Repairing vehicle air conditioners includes adding, removing, and recycling CFC refrigerants, as well as performing general maintenance on vehicle air conditioners. These activities are regulated under the CAA provisions designed to prevent ozone depletion by requiring the

capture and recovery of used refrigerants, the use of certified recycling equipment, and the training and certification of operators.

3.12.1.5 Washing Vehicles and Shop Floors

Washing vehicles and shop floors including spraying water and detergent on vehicles and floors and discharging the washwater through a drain to a septic tank is prohibited under SDWA. Some facilities may dump used washwater on the ground outside of the facility, which is generally improper. Washing vehicles and shop floors may be regulated under the pretreatment program or NPDES program of the CWA. These sections may require the facility to obtain permits, install oil and water separators, or comply with other provisions designed to prevent contaminated wastewater from reaching the environment.

3.12.1.6 Repairing or Replacing Exhaust Systems

Repairing or replacing exhaust systems consists of repairing or replacing catalytic converters. Any work that affects vehicle emissions is regulated under the CAA, which requires that records be kept of all converter repair and replacement, and specifies procedures for ensuring that removed converters are properly replaced.

3.12.1.7 Painting Vehicles

Vehicle painting includes overall body painting, touch up, paint and thinner mixing, and unusable paint and thinner disposal. Vehicle painting often is conducted in an enclosed room or booth that has positive pressure ventilation to ensure that paint fumes leave the room, rather than being inhaled by the painter. To minimize air pollution, air filters are placed in the vents and changed regularly. Vehicle painting also includes changing and disposing of these filters. If significant quantities of paints containing hazardous materials are used or if the tribal government is located in a designated geographic area, air emissions from painting operations may be regulated under the CAA, which may specify the type of ventilation system required and the frequency for changing the filters. The disposal of air filters used to filter emissions from paints containing hazardous materials, disposal of many unusable paints, and disposal of spent thinners is regulated under RCRA. Preparing a vehicle for painting (*e.g.*, stripping, sanding) may also be regulated under RCRA because such activities may result in the generation of a hazardous waste.

3.12.1.8 Storing Materials Outside

Due to space and safety concerns, many vehicle repair shops store drums of used and new fluids, hazardous materials, batteries, vehicle parts, or other wastes outside of the shop. The storage of any materials that could reach waterways through spills or stormwater runoff are regulated under the NPDES direct discharge or stormwater discharge provisions of the CWA, which require that the facility prevent these materials from coming in contact with stormwater.

3.12.2 Fueling Stations

Tribal governments operate and maintain vehicle-fueling stations to provide fuel to their vehicles. Because these activities could affect the environment, they are regulated under environmental laws and regulations, as indicated below.

- Fuel storage – CWA and RCRA;
- Fuel dispensing – CAA; and
- Disposal of spilled unusable fuel – RCRA and SDWA

3.12.2.1 Fuel Storage

Vehicle fuels, including gasoline, kerosene, and diesel fuel, are stored in underground or aboveground storage tanks that are connected by piping to a fuel-dispensing unit. The operation and maintenance of these tanks may be regulated under the SPCC section of the CWA, which requires development and implementation of spill prevention plans and secondary containment for aboveground tanks, and/or under the UST section of RCRA, which specifies structural, monitoring, and leak detection requirements for underground tanks. See Section 3.6.5.

3.12.2.2 Fuel Dispensing

Fuel dispensing units used at tribal government facilities are similar or identical to those used at retail service stations and could emit organic vapors to the atmosphere. In some areas, dispensing is regulated under the CAA, which may require the dispensing units to have vapor recovery systems at the point of fueling and at the location where the aboveground or underground fuel storage tanks are filled. In addition, fuel-dispensing units are required to dispense fuel at a prescribed gallons-per-minute rate to prevent spills.

3.12.2.3 Disposal of Unusable Fuel

In the course of fueling or fuel loading operations, fuel may be spilled. Fuel that cannot be dispensed into a vehicle for use must be disposed of properly. The disposal of this fuel may be regulated under RCRA, which sets requirements for handling, storage, and ultimate disposal of hazardous wastes. A repair shop may be required to report any spill to tribal authorities.

3.12.3 Purchasing

Purchasing includes the acquisition of vehicles, equipment, and materials. The purchasing of clean fuel vehicles for tribal governments with large vehicle fleets may be regulated under the CAA. Other purchasing decisions, such as the purchase of hazardous or water-based solvent, can directly impact whether the fleet operations are subject to additional environmental requirements.

3.12.4 Pollution Prevention in Vehicle/Equipment Maintenance

Pollution prevention opportunities abound in the area of vehicle and equipment maintenance. Usually, three factors contribute to the level of success of a pollution prevention plan. The first factor involves auditing current procedures, researching pollution prevention opportunities, and committing to make appropriate and beneficial changes. This step requires researching alternative products and funding equipment purchases. The second factor is funding. Generally, present funding can be reappropriated in a phased plan to purchase new equipment, products, and/or contract services. The third factor deals with the regulatory requirements and contract services available based on the facility's location. Some facilities base their decisions for a pollution prevention plan on the regulatory requirements contained in RCRA, OSHA, and/or tribal regulations.

Pollution prevention technology implemented under this approach will enhance the safety of workers, improve regulatory compliance, and may lower the operating costs of the facility. There are many options for pollution prevention, depending on the waste stream's characteristics and regulatory requirements. Some of the best ideas for pollution prevention can come from mechanics who perform the tasks every day, but changing old habits is the key to pollution prevention success. The remainder of this section highlights pollution prevention options by waste stream.

3.12.4.1 Typical Wastes Generated

- Cleaning solvents;
- Anti-freeze/coolant;
- Used/soiled shop rags;
- Unrecovered Freon from air conditioners;
- Oil/lubricants; and
- Scrap metal.

3.12.4.2 Parts Cleaning Systems

There are many different types of parts cleaning systems. Some utilize a pump to circulate cleaning solvent/solutions. These machines can be managed by the facility or contracted to a service that maintains the system and hauls away any generated wastes. The type of system and the solvent/solution (*e.g.*, organic based, aqueous, citrus based) used in the system will determine the applicable regulatory management requirements and pollution prevention opportunities. Some systems have a distiller to clean the solvent and a reservoir tank to hold the waste that is "cooked" out, while others utilize filters to extract impurities. Protecting the integrity of the cleaning solvent/solution in order to extend its life and reduce disposal quantities is pollution prevention. For example, it may be possible to avoid reaching a regulated threshold by managing system use, including purchasing a different system or altering filter types. Also, there are aqueous-, semi-aqueous, and citrus-based systems that offer unique opportunities for pollution prevention. With any of these types of systems, it is important not to introduce any non-compatible solvents/solutions into them that would cause them to become regulated hazardous waste.

Some Factors to Consider in a Filtered System

- Utilizes non-chlorinated solvents in the system;
- Has a high flash point solvent of more than 140 degrees;
- Has a closing lid for when the system is not being used to reduce evaporation and air emissions;
- Can meet all regulatory requirements regarding disposal of filters; and
- Meets OSHA safety requirements.

Some Factors for Aqueous Solution Systems

The system cleans to the standard required for the part to function properly;
There will be minimal regulatory restrictions if disposal of the solution is required; and
A balance needs to be maintained for the bioremediation in the system to work properly.

Key Tips. Maintain the solution/solvent integrity to extend the solution/solvent life and increase the frequency of filter replacement to reduce disposal costs of solvent/solution. Let the part sit in the washbasin and drip dry to reduce solvent "drag out" loss. Choosing aqueous systems may reduce regulatory requirements all together.

3.12.4.3 Pressurized/Aerosol Cleaners

Chlorinated solvents/solutions should not be used in any application to clean parts. Avoid using any aerosol cleaning products that are not RCRA approved. The use of these types of solvents/solutions can cross contaminate fluids and make them regulated under RCRA and increase OSHA requirements. Solvent/solutions purchased in bulk and applied with self-pressurizing applicators will reduce the use of the product and waste containers. Pre-cleaning with a putty knife and wire brush and utilizing recyclable shop rags will also reduce disposal cost and excess use of solvents/solutions. Verify compatibility of the with the parts washer's solvent/solution. Aqueous solutions may be the best option when utilized properly. There are pre-cleaning solvents/solutions that can affect the parts washing tank if, after use, further cleaning of a part is required in that system. Eliminate overuse and set standards on the amount of cleaning required for the particular part to function properly.

Some Factors to Consider in a Self-pressurizing System

- Use of non-chlorinated solvents.
- Solvent/solution is compatible with the parts washer.
- Solvent/solution's contents affect on RCRA/OSHA regulatory requirements.
- Does the manufacturer/supplier offer system product support and/or training?

Key Tips. Utilizing a scraping device and/or wire brush, recyclable shop towels, and a non-regulated RCRA solvent/solution will reduce usage and hazardous waste regulatory requirements. Solvents/solutions with low VOC and low toxic contents produce fewer emissions that are harmful to the employee.

3.12.4.4 ANTI-FREEZE/COOLANT

Using manufacturer-specified antifreeze/coolant is required to maintain warranties and extend the life of the vehicle/equipment. Antifreeze/coolant can be recycled in various ways, to manufacture specifications and for reuse on site. The facility should verify that the vehicle/equipment warranty would be honored if this reused antifreeze/coolant were utilized. One method to recondition used antifreeze/coolant is to utilize a mobile service to perform on-site recycling at your facility. Verify that the service is licensed, and have a neutral third party laboratory test results to demonstrate the system works, and guarantees the product. Another approach is to purchase and use an on-site recycling machine. This allows full management of the system's use and the quality of the product it produces. Either one of these will reduce new product purchases and associated RCRA disposal costs, as well as ensure a readily available product.

Some Factors to Consider in Choosing the Best Method for the Facility

- Verify warranty coverage of the vehicle/equipment for the system/service chosen.
- Verify disposal approval for filters generated from the recycling system.
- See if bulk containers for used/recycled anti-freeze are available and proper storage can be achieved.

Key Tip. Whatever method is chosen, tribes should make sure testing and warranties of the system's product are backed, and the manufacturer of the vehicle/equipment allows for the use of the reconditioned anti-freeze/coolant.

3.12.4.5 SHOP RAGS

Do not use disposable shop rags. Obtain and use reusable rags, contract with a company to deliver clean (reusable) rags and pick up dirty (reusable) rags. Verify that the service selected has an approved method and facility for recycling the rags. The only exception to utilizing a service is if the facility's nonregulated waste is disposed of at a waste-to-energy plant that can incinerate waste rags. Remember, never use chlorinated solvents regardless of the recycling/disposal method.

3.12.4.6 Air Conditioning

There are several manufacturers that have different machines that will recover Freon from a system for off-site recycling. Other machines recover and recycle the Freon and then place the recycled Freon back into the repaired unit. These types of machines reduce new Freon purchases and disposal costs associated with the management requirements of the waste stream. If the repair of air conditioners is performed offsite, tribes should verify that the company handles generated waste consistent with applicable regulations.

Some Factors to Look for in Selecting a Machine

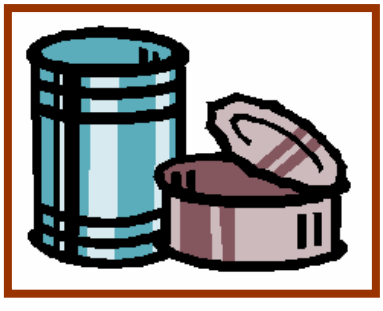
- Is regulatory approved and registered?
- Is backed by third party test results verifying efficiency?
- Has factory warranty and supplier training?

3.12.4.7 Lubricating Oils

There are several types of lubricating oils in the various types of vehicles/equipment in use today. Changing these oils should be performed as determined by use and not according to specific dates. If the vehicle/equipment is underutilized and/or is only needed for a specific task, changing the oils by a timed date is a waste of resources. Synthetic oils generally have a longer span of time for use before a change is required. When choosing the correct lubricant, verify warranty approval and track the miles/hours of use of the product in the vehicle/equipment. Check various disposal options to see if refining of the waste oils is available over fuel blending for incineration. Keep non-compatible oils separate from one another to reduce possible cross contamination and increased disposal cost.

3.12.4.8 Metal Recycling

Most replaced parts are made of metal. Some metal parts must be exchanged for the new part when purchased. Many parts can be recycled, saving the facility disposal costs. Lead tire weights, broken engine brackets, nuts and bolts, and body parts are just a few that have value for



recycling. Set up places to store the recyclable metal, preferably out of the weather, and contract with a scrap dealer to pick up the recycled parts at the facility on an as needed basis. Some scrap dealers will supply the container to the facility for the storage of the metal to be recycled. The scrap dealer may require separation of the different metals.