

SUBCOMMITTEE ON CONSEQUENCE ASSESSMENT AND PROTECTIVE ACTIONS (SCAPA)

2005 ANNUAL REPORT

December 31, 2005

2005 SCAPA Annual Report

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1.0 Introduction

This compilation of information represents the first annual report of the programs associated with the Subcommittee for Consequence Assessment and Protective Actions (SCAPA). Annual reports, describing the SCAPA activities, will be prepared each year the program is active.

The following presents the SCAPA Charter:

Background

The Comprehensive Emergency Management System (CEMS) of the Department of Energy/National Nuclear Security Administration (DOE/NNSA) provides the overall framework for responding to all emergency events involving or affecting the Department. The CEMS is defined by the requirements of DOE Order 151.1C Comprehensive Emergency Management System and the associated Emergency Management Guide. The development of this order and the associated guidance has been an iterative process. The Subcommittee on Consequence Assessment and Protective Actions (SCAPA) was created as an integral part of this process to provide recommendations on emergency management issues to the Office of Emergency Management and developing guidance and products for use in the CEMS. The purpose of the EMI SIG is to foster the exchange of information, ideas, resources, and products of interest within the DOE/NNSA emergency management community. After years of operating as a part of the Emergency Management Advisory Committee, SCAPA is now a subcommittee of the Training Resource and Data Exchange (TRADE) Emergency Management Issues Special Interest Group (EMI SIG).

Mission Statement

The SCAPA supports the Office of Emergency Management by developing and disseminating throughout the DOE community technical guidance, recommendations, and resources to improve emergency preparedness, consequence assessment capabilities, and the formulation of protective actions. The goal of the SCAPA is to enhance the ability of the DOE emergency preparedness and response community to protect the health and safety of workers, members of the public and ecological resources in the event of the release to the environment of any hazardous radiological, chemical, or biological materials.

Membership and Organizational Structure

The SCAPA is composed of Federal employees and contractors from a wide spectrum of DOE/NNSA facilities. SCAPA membership is open to DOE and contractor personnel who are doing emergency response and planning work for the DOE or are doing technical work that has applications to emergency response and planning. Membership in the SCAPA is voluntary and is also be extended to other Federal agencies having a need to participate.

The SCAPA Chair is a Federal employee or contractor appointed by the Office of Emergency Management. The subcommittee is supported by working groups specializing in selected topics or elements within the CEMS. Membership in working groups is determined by the SCAPA Chair. Selection is based on experience and expertise relevant to the specific focus of each working group.

SCAPA decisions concerning topics of interest is made with a simple majority vote of the full subcommittee during a regularly scheduled meeting or during a virtual meeting (e.g., a conference call or video conference), or by written or electronic balloting.

Objectives and Functions

The objectives and functions of SCAPA are

- to review relevant requirements for emergency preparedness and response aspects of consequence assessment and protective actions, and to review relevant requirements for other areas of emergency management;
- to identify additional requirements or the need for specific implementing guidance;
- to develop or review implementing guidance and recommendations of special concern to the Office of Emergency Management—for example, Emergency Response Planning Guidelines, Acute Exposure Guideline Levels, Temporary Emergency Exposure Limits, methodologies for dealing with chemical mixtures, and Protective Action Guidance;
- to provide guidance on the development, deployment, and implementation of consequence assessment models;
- to identify or develop research needs or issues related to improvements in emergency management of biological, chemical, and nuclear operational emergencies;
- to perform specific reviews and provide technical recommendations as requested by the Office of Emergency Management or the EMI SIG;
- to provide an information-sharing forum to promote consistency throughout the DOE/NNSA for the emergency management of releases of hazardous materials; and
- to provide a source of expertise in planning for responses to nuclear, biological, and chemical hazardous materials emergencies – This may involve the consideration of incidents involving inadvertent releases, terrorist activities, the use of weapons of mass destruction, natural disasters, and other events.

Meetings

Meetings are held in conjunction with the annual EMI SIG meeting. Additional meetings (e.g., via conference calls or video-teleconference) is arranged by the Office of Emergency Management as needed. Following each meeting, succinct minutes, including issues identified, is developed and submitted by the Chair to the Office of Emergency Management within 20 working days.

2.0 Annual Meeting and Teleconferences

Annual Meeting

The Department of Energy (DOE) Subcommittee on Consequence Assessment and Protective Actions (SCAPA) convened its annual meeting at the Marriott Renaissance Arts Hotel in New Orleans, LA, on Thursday, May 5, 2005, in conjunction with the Emergency Management Issues Special Interest Group (EMI SIG) meeting. Forty-six (46) individuals from the public and private sectors participated in this year's SCAPA meeting.

The primary purpose of the annual SCAPA meeting was to continue to provide a forum for SCAPA members and its associates to review its accomplishments, products, and projects since the last SCAPA meeting on May 6, 2004 in Washington, DC, and to also discuss its present and future mission and its implementation. Several technical presentations of interest to the membership, including those from the now four active SCAPA Working Groups, were delivered.

Dr. Al Feldt, NA-41 SCAPA Federal Official, welcomed everyone. Tom Rotella, spoke briefly for Jim Fairobert indicating that SCAPA was a very viable part of NA-41 and will continue to be funded. Carl Mazzola reviewed the important points that were discussed and decisions that were made during the 2004 SCAPA Meeting and briefly discussed the report on the Washington, DC SCAPA meeting. Carl reviewed the status of the open action items and their proposed disposition. Since the last SCAPA Meeting, all of us have lost a good friend in Doan Hansen, who passed away on March 12, 2005. Rocky Petrocchi presented a brief memorial about the life and accomplishments of Doan Hansen. His passing leaves a void in the SCAPA program and in the lives of the many people who knew him.

Cliff Glantz introduced several DOE/NNSA Biosafety Officers (BSOs) and reported on their meeting. Three of the BSOs engaged in a panel discussion of how they support the consequence assessment and protective actions functions of their respective Emergency Operations Centers (EOCs). Bettina Stopford and Reed Hodgkin made presentations related to Biosafety topics. Bettina's addressed the limitation of biological detection devices the difficulties in integrated biological components into an emergency management regime. Reed discussed the biosafety consequence assessment system he is developing for BNL. This is the first SCAPA Meeting that has had a biosafety component and the five presentations jump started the establishment of this SCAPA program element. Cliff Glantz moved on to the efforts of the Consequence Assessment Modeling (CAM) Working Group (WG) and the issues that the group was addressing. The primary concern of the CAM WG is to develop the appropriate NA-41 response to upcoming DOE O 414.1C and its companion guide, G 414.1-4, which will soon be finalized. These guides are requiring some level of Software Quality Assurance (SQA) of codes associated with consequence assessment and Emergency Preparedness Hazard Assessments (EPHAs).

The CAM WG is also addressing other matters associated with the transport and dispersion modeling of uranium hexafluoride and the appropriateness of different International Council on Radiation Protection (ICRP) dose conversion factors to radiological consequence assessment. Carl Mazzola presented an update on the new SQA requirements for Chip Lagdon, who is responsible for the DOE/EH Central Toolbox Registry. SQA requirements are graded into Levels A, B, and C, depending on the safety significance of the code. Larry Campbell discussed why Fluor-Daniel, the Hanford M & O Contractor, believes that certain emergency preparedness codes are Level B per the classification in the upcoming DOE order.

Michael Dillon presented an update to the National Atmospheric Release Advisory Capability (NARAC) system and its products to the DOE/NNSA community, and both he and Chuck Hunter presented separate responses that NARAC and Savannah River Site (SRS) took to assist in the consequence assessment of the January 6, 2005 rail accident and chlorine release at Graniteville, SC. Reed Hodgkin presented decision-based consequence assessment tools that he had developed for the Sandia National Laboratory (SNL)/New Mexico (NM), while Carl Mazzola provided an annual update of the activities of the DOE Meteorological Coordinating Council (DMCC). These seven presentations completed the consequence assessment portion of the meeting. Doug Craig, Rocky Petrocchi, Po-Yung Lu, and Richard Thomas each presented various talks on the toxic end point Protective Action Criteria (PAC) and reviewed the activities of the Chemical Exposure Working Group (CEWG) and the Chemical Mixture Working Group (CMWG). This segment of the meeting concluded with a fifth presentation by Tony Pierpoint on the automated Temporary Emergency Exposure Level (TEEL) data base.

Carl Mazzola recapped the meeting, reviewed the action items, and indicated when the next SCAPA meeting will be conducted. There were no new action items identified during the meeting. All existing action items will be periodically reviewed by NA-41 through future conference calls. Each WG will report on its activities at the next SCAPA meeting which is scheduled in conjunction with the next EMI SIG meeting. This meeting will be held in Las Vegas, NV on May 4, 2006.

Listed below are the forty seven (47) individuals that attended the 2005 SCAPA Meeting:

Armstrong	Denny	LANL	Armstrong@lanl.gov
Arnold	Steven	Portsmouth	Arnolds@ttnus.com
Baker	Michele	WSMS Mid-America	Michele.baker@wsms.com
Bond	Shawn	BHI	slbond@bhi-erc.com
Bonner	Darryl	Bechtel Jacobs OR	b9r@bechteljacobs.org
Brog	Terry	Alpha-TRAC	tbrog@alphatrac.com
Brynildson	Mark	SNL/CA	mebryni@sandia.gov
Campbell	Larry	Fluor-Hanford	Larry.R.Campbell@rl.gov
Cheng	Jeng	NA-41	Jeng.chang@NNSA.doe.gov
Cohen	Dorothy	ORISE	cohend@orau.gov
Craig	Doug	ATL International	cragdk@earthlink.net
Davis	Wayne	WSMS Aiken	Wayne.davis@wsms.com

de la Rosa	Diane	SNL/Albuquerque	ddelar@sandia.gov
Dillon	Michael	LLNL	Dillon7@llnl.gov
Dyer	Debra	DOE Oak Ridge	dyerdg@oro.doe.gov
Fairobent	Jim	NA-41	Jim.fairobent@nnsa.doe.gov
Feldt	Al	DOE	Al.feldt@nnsa.doe.gov
Funk	Glenn	LLNL	funkzo@llnl.gov
Glantz	Cliff	PNNL	Cliff.glantz@pnl.gov
Henderson	Sam	SAIC	hendersons@saic.gov
Hickey	Eva	PNNL	Eva.hickey@pnl.gov
Hodgin	Reed	Alpha-TRAC	Rhodgin@alphatrac.com
Hunter	Chuck	SRNL	Chuck.hunter@srnl.gov
Jamison	Jim	SAIC	Jamisonj@saic.com
Knazovich	Michael	SNL/NM	mwknazo@sandi.gov
Long	Jeff	ORNL	longja@ornl.gov
Lu	Po-Yung	ORNL	lupy@ornl.gov
Manis	Lori	ORNL	Manisew@ornl.gov
Martin	Greg	SAIC	martingr@saic.gov
Martin	Amber	WSMS Mid-America	Amber.martin@wsms.com
Mazzola	Carl	Shaw Environmental	Carl.mazzola@shawgrp.com
Mitchell	Roger	PNNL	Roger.mitchell@pnl.gov
Murphy	Ann	ORNL	Murphyam@ornl.gov
Petrocchi	Rocky	WGI	rocky.petrocchi@wgint.com
Pierpoint	Tony	ATL International	apierpoint@atlintl.com
Pobanz	Brenda	NARAC	bpobanz@llnl.gov
Powers	Jim	NA-41	jim.powers@nnsa.doe.gov
Purtyman	William	LANL	pico@lanl.gov
Rotella	Tom	NA-41	thomas.rotella@nnsa.doe.gov
Royce	Barbara	BNL	royce@bnl.gov
Salmonson	Brad	INL	Bradley.Salmonson@inl.gov
Sassone	Dina	LANL	dinas@lanl.gov
Seidel	David	LANL	dseidel@lanl.gov
Stopford	Bettina	SAIC	stopfordb@saic.com
Thomas	Richard	Intercet	rthomas@intecet.com
Tuccinardi	Tom	ATL International	ttuccinardi@adelphia.net
Van Gorp	Gail	ANL	rvangorp@anl.gov

A meeting report was developed and can be accessed at the following address:
<http://orise.ornl.gov/emi/scapa/files/05mtg/SCAPA-Meeting-Highlights.pdf>.

Teleconferences

Eight SCAPA teleconferences took place in 2005 in order to maintain continuity of the program activities. Highlights were prepared and they can be accessed under the *SCAPA Teleconference Highlights* heading at the following web address:

<http://orise.orau.gov/emi/scapa/news.htm>. These teleconferences took place on the following dates in 2005:

- January 18: 18 individuals took part;
- February 24: 17 individuals took part;
- March 24: 14 individuals took part;
- June 21: 21 individuals took part;
- July 28: 16 individuals took part;
- September 7: 26 individuals took part;
- October 19: 26 individuals took part; and,
- November 29: 26 individuals took part.

Fifty (50) different individuals participated in at least one of the SCAPA teleconferences. They include:

- Denny Armstrong, LANL
- Michele Baker, WSMS
- Shawn Bond, Hanford
- Cindy Brizes, SRS
- Larry Campbell, Fluor Hanford
- Jeng Cheng, NA-41
- Dorothy Cohen, ORISE
- Wayne Davis, WSMS
- Diana De La Rosa, SNL
- Leon Duquella, OROO
- Al Feldt, NA-41
- Glen Funk, LLNL
- Robert Gee, Y-12
- Jerry Gilbeault, INL
- Cliff Glantz, PNNL
- Jerry Grantham, BNL
- Jim Hardy, Consultant
- John Harris, ORNL
- Michael Heitkamp, WSRC
- Eva Hickey, PNNL
- Chuck Hunter, SRNL
- Jim Jamison, SAIC
- Tim Joseph, OROO
- Mike Lazaro, ANL
- Courtney Lester, WSMS
- Po-Yung Lu, ORNL
- Margaret MacDonnell, ANL
- Amber Martin, WSMS
- Pete Matonis, INL

- Carl Mazzola, Shaw Environmental Inc.
- John Nasstrom, LLNL
- Bill Peterman
- Rocky Petrocchi, WGI
- Tony Pierpoint, ATL
- Brenda Pobanz, LLNL NARAC
- Jim Powers, NA-41
- Frank Roberto, INL
- Jack Salazar, LBNL
- Brad Salmonson, INL
- Dina Sassone, LANL
- David Seidel, LANL
- Peter Stang, NA-41
- Richard Thomas, Intercet
- Tom Tuccinardi, Excalibur Associates
- Gail Van Gorp
- Gus Vazquez, EH-41
- Kerry Ward, INL
- Jim Weeks, ATL International
- Gary Winner, ANL
- Jim Woodring, ANL

A total of seventy two (72) individuals participated in some aspect of the SCAPA program in 2005.

3.0 Working Group Accomplishments

3.1 Chemical Exposures WG

The chemical exposures WG were involved in seven (7) specific projects in 2005. The following summarizes each effort and correlates it to its action item(s):

AI 04-04: Revision 21 of the TEELs, which included 429 new chemicals and expansion of TEELs data base was developed. Modifications to the TEEL software macros to include interim AEGL values in hierarchy were accomplished. Revision 21 has been posted on the SCAPA web page.

AI 04-22: A comprehensive TEEL Derivation Methodology paper was drafted. The document is being compiled by ATL International, and may be used as an Emergency Management Guide (EMG) appendix.

AI 04-41: Lower Explosive Limits (LELs) for 502 chemicals with TEELs was acquired and the affected TEEL chemicals was footnoted with LEL values and reported in TEEL Rev 21.

AI 04-55/05-03: A PNNL summer intern, Eduardo Donoso, assisted with the first stage of Software Quality Assurance (SQA) of the chemical TEEL macros. This PNNL summer intern developed a report, "*Software Quality Assurance Activities in Support of Temporary Emergency Exposure Levels (TEELs)*" that reported:

"All of the macros currently included in the TEEL Rev. 21 Excel file have been reviewed by checking the code on a line to line basis, and hand calculations have been made for several key conversions. Everything tested (as indicated above) functions as it should and the coding in the macros follow the approach outlined in TEEL methodology documentation."

The DOE/NA-41 TEEL Advisory Group (TAG) discussed the report and concurred with its general findings. There still is a need for a software custodian, a procedure document for updating the TEEL macros, and other TEEL macro documentation.

AI 04-58: TEELs for twelve (12) refrigerants were developed for the American Society for Heating Refrigeration and Air conditioning Engineers (ASHRAE).

AI 05-09: The development of the TEEL methodology and the use of TEELs is progressing. Drafts of Sections 2 (Risk Management), 3 (TEEL Methodology), and 4 (Review Process) have been reviewed. The first draft of entire document was issued in late December.

AI 05-10: Almost 400 new chemicals require TEEL development which will be part of the Revision 22 TEEL development effort. Work has begun on the Revision 22 TEELs and is targeted to be completed by the end of FY06.

3.2 Chemical Mixtures WG

The chemical mixtures WG were involved in five (5) specific projects in 2005. The following summarizes each effort and correlates it to its action item(s):

AI 04-05: Chemical Mixture Methodology (CMM) files were placed on the SCAPA website and a CMM Universal Resource Locator (URL) was added, making automated chemical mixture analysis using Health Code Numbers (HCNs) available to DOE/NNSA analysts. The draft Hazard Assessment, Protective Actions and Re-entry Emergency Management Guides (EMGs) contained CMM input.

AI 04-23: 285 new TEELs Revision 20 chemicals have been added to the Automated Mixture Methodology workbook HCN-TEEL look-up table. New HCNs will be added as they are developed.

AI 04-44: A HCN methodology technical paper is under development and will be published in the Journal of Applied Toxicology, or other peer-reviewed journal.

AI 04-48: Approximately 800 older HCN 4.00 chemicals need to be revised. Prior to the completion of this task, HCN 4.00 results in the CMM will be treated as overly conservative. A note to the User about HCN 4.00 was placed in the SCAPA website CMM file Output results.

AI 04-57: Protective Action Criteria (PAC) training for the DOE/NNSA community on how to use automated CMM was partially accomplished within the scope of the EMI SIG workshop.

3.3 Consequence Assessment Modeling WG

The consequence assessment modeling WG were involved in nine (9) specific projects in 2005. The following summarizes each effort and correlates it to its action item(s):

AI 03-08: NARAC technical basis documents to support future DOE/NNSA consequence assessment modeling efforts are being compiled and will be provided to DOE/NNSA site emergency managers when they are complete.

AI 04-39: A list of "beyond-the-DOE/EH-modeling-toolbox" and NARAC user group issues has been proposed for the Consequence Assessment Modeling WG. Once the SQA effort moves forward, the WG address these issues.

AI 04-51: The NARAC Advisory Group met at the EMI SIG Meeting and has interfaced well with the SCAPA Consequence Assessment Modeling WG.

AI 04-52/05-04/06-01: The upcoming toolbox effort was fully integrated with the DOE/EH Central Toolbox Registry, with good dialogue with Debra Sparkman throughout. DOE Order 414.1C and DOE Guide 414.1-1 were issued in June and registry videoconferences rolling out the order requirements were held in July and August. Hanford, as well as Central Toolbox Registry, has determined that Level B is applicable to Emergency Preparedness & Response (EP & R) codes. A DOE/NNSA SQA self assessment strategy and a listing of candidate toolbox models are to be identified by April 2006.

AI 05-01: Wayne Davis requested SCAPA support on resolving the TEEL values for UF₆ and its hydrolysis products of UO₂F₂ and HF. This is a modeling issue with toxicology overtones, complicated by the hydrolysis reaction of uranium hexafluoride. Jim Jamison has developed a draft White Paper and a full paper for ANS 9th Topical Meeting on Emergency Preparedness & Response. HGSYSTEM-UF₆, RASCAL, ALOHA and EPICODE modeling by Amber Martin and Michele Baker is continuing. Portsmouth is requesting analysis to be completed by December 31.

AI 05-05: At the EMI SIG NARAC User Group meeting, it was suggested that NARAC ingest ARCON96 to provide the capability of calculating radiological and chemical impacts at distances as close as 10 meters from the release point. NARAC indicated that it would begin this process in December.

AI 05-07: During a SCAPA teleconference, Wayne Davis identified a need to determine whether ICRP-30, ICRP-68/72, and ICRP-90 Dose Conversion Factors (DCFs) are applicable to EPHAs and consequence assessment models. A technical paper at the 9th EP & R Topical Meeting will discuss the results of this evaluation.

AI 05-08: Seven SCAPA-led sessions will occur during February 12-15, 2006 Topical Meeting. SCAPA WGs assisted with the abstract and full paper reviews.

AI 06-02: The NARAC code is being used for EPHA applications and may contain non-conservatism relative to 95% meteorological condition. WG working closely with NARAC to determine if there are any adverse impacts and whether additional iClient documentation and training will be required.

3.4 Biosafety WG

The biosafety WG were involved in four (4) specific projects in 2005. The following summarizes each effort and correlates it to its action item(s):

AI 04-12: A listserv of DOE individuals with biosafety-related responsibilities has been developed. This listserv includes each site's Biosafety Officer (BSO). A Biosafety Working Group was formed in April and attended and participated in the May 2005 EMI SIG and SCAPA meetings.

AI 04-14: Protective Action Guides (PAGs) and health indicators for biological agents (e.g., anthrax and smallpox) were developed and are contained in the draft Biosafety EMG. The Biosafety WG is reviewing this EMG.

AI 04-54: A biosafety session was integrated into the SCAPA meeting and several NNSA/DOE BSOs participated.

AI 06-03: The first Biosafety WG teleconference took place on December 8.

Four SCAPA WGs were involved in a total of twenty-five (25) projects in 2005. A fifth SCAPA WG, the *Source Term WG*, remained dormant in 2005 as its members focused on other issues.

4.0 Web Page

The SCAPA webpage continues to be a living document, reflecting the work of SCAPA that its members are conducting. A substantial number of improvements and updates were made to the SCAPA website on a regular basis throughout 2005. These included:

- Modifications to the SCAPA main page;
- The addition of the “*In Memoriam: Dr. Doan J. Hansen*” webpage;
- Modifications to the *SCAPA News* webpage. This included:
 - New “SCAPA news” reports;
 - posting of teleconference highlights for every 2005 teleconference;
 - 2005 SCAPA meeting announcements and logistical information;
 - 2005 SCAPA meeting report minutes; and,
 - An updated list of SCAPA action items.
- Modifications to the TEEL webpage. This included:
 - Updated and enhanced links to TEEL Rev. 21 (both SCAPA tables and the searchable database hosted by ATL International, Inc.);
 - Revised links to SCAPA web pages the present “basic information on AEGLS”, “summary information and definitions for ERPGs”, and “TEEL definitions”;
 - Updated and expanded links to TEEL references; and,
 - The addition of instructions and forms for requesting TEEL values for additional chemicals.
- Addition of a DMCC webpage. This includes links to meeting notes from previous DMCC meetings; and,
- Revisions to the SCAPA contact list and updates to the reference link webpage.

5.0 Action Items

On January 1, 2005, there were 20 open SCAPA action items. The following shows the progress on each of these antecedent action items during 2005:

AI No.	Description	1/1/05 Status	12/31/05 Status
03-08	Acquire NARAC technical basis documents to support future DOE/NNSA CA modeling efforts	John Nasstrom, LLNL, contacted 1/7/04. Provided list of NARAC papers in late January. Need to decide if list is complete and forward to SCAPA membership through web page.	Awaiting publication of NARAC technical documents.
04-02	SCAPA program volunteer support	NA-41 supplied a draft of letter in November 2004. Letter to be issued after final review.	Letter supplied to NA-41 (CLOSED) .
04-04	Development of TEELs Revision 21 and expansion of TEEL data base	CH2M Hill requested TEELs for 17 chemicals. 4 chemicals on AEGL list do not have TEELs. 409 new LANL chemicals received. More to come from Reed Hodgkin. Work has begun now that quality assurance of macro modifications that include interim AEGL values in hierarchy is done.	TEELs Revision 21 completed with 429 new chemicals. Hierarchy revised to include interim and final AEGL-2 values as the highest hierarchy level. SQA work began with PNNL intern in the summer. TEELs posted on SCAPA web page and also shown on TEELs searchable data base (CLOSED) .

AI No.	Description	1/1/05 Status	12/31/05 Status
04-05	Applicability of HCNs	The CMM files have been placed on SCAPA website making automated chemical mixture analysis using HCNs available to DOE/NNSA analysts. Through TAG Workshop, complete development & delivery of training for DOE/NNSA community on how to use automated CMM. Draft HA EMG verified for CMM compatibility. Evaluate CMM compatibility with new draft PA, and re-entry EMGs.	HCNs and CMM part of May 2, 2005 PAC Workshop at EMI SIG meeting. This raised awareness of them. Being used at SNL-Albuquerque and BNL. At November 16, 2005 SCAPA Program Meeting, their limited applicability to DOE/NNSA sites was discussed (CLOSED).
04-12	Recruit toxicologists and microbiologists to establish SCAPA bioagent working group	Cliff and Larry developing list of DOE individuals with bioagent capabilities. Doan seeking individuals outside DOE. Sites looking for program guidance.	Bioagent Working Group established in April 2005. WG had first meeting at May 2005 EMI SIG meeting, significantly participated in Annual SCAPA meeting and had first teleconference on December 8, 2005 (CLOSED).
04-14	Bioagent source terms and consequence thresholds	Biosafety Levels (BLs) ideal criteria for categorizing/binning consequences. CDC uses BLs in its interim rule.	Integrated into Biosafety WG activities and the draft Biosafety EMG (CLOSED).
04-22	TEEL methodology paper	Comprehensive TEEL Derivation Methodology paper drafted and comments received from Doug/Rocky. May be used as an EMG appendix.	Comprehensive TEEL Derivation Methodology paper drafted and comments incorporated. Document to be compiled by ATL. May be used as an EMG appendix. Little activity with the exception of its integration with the ATL TEELs documentation effort.

AI No.	Description	1/1/05 Status	12/31/05 Status
04-23	HCNs for Revision 20 TEELs	Work has begun. 285 new TEELs Rev. 20 chemicals added to Automated MM workbook HCN-TEEL look-up table. HCNs can be added as developed.	285 new TEELs Rev. 20 chemicals added to Automated CMM workbook HCN-TEEL look-up table. HCNs can be added as developed. Priority of revision of older HCN 4.00 chemicals has been placed after Revision 20 HCN development. Revision 21 HCNs will be developed afterwards.
04-39	Firm up consequence assessment issues for CAM WG	List of beyond the toolbox and NARAC user group issues has been drafted.	Beyond toolbox and NARAC user group issues has been proposed. Will become more active once the SQA effort moves forward.
04-41	TEEL-3 value comparison to LEL	LELs for 502 chemicals with TEELs acquired. Consensus on LEL fraction is needed. Short-term solution is to footnote TEELs with LEL values.	TEEL-3 value comparison to LEL integrated into TEELs Revision 21 effort (CLOSED).
04-44	Development of a HCN methodology technical paper	Doug Craig and Rocky Petrocchi have scoped the paper. Doan Hansen and Tom Tuccinardi will be peer reviewers.	Publication expected in <i>Journal of Applied Toxicology</i> . First draft is being prepared and will undergo peer review.
04-48	Revision of older HCN 4.00 Chemicals	Priority of this activity has been placed after HCN development (see AI 04-23).	Activity integrated into AI 04-23 (CLOSED).
04-51	NARAC User Advisory Group	Cliff Glantz attended the very successful July 22-23, 2004 User Group meeting at LLNL. Future workshops planned in CY05.	Cliff Glantz has facilitated the NARAC User Advisory Group with SCAPA. The group met at the 2005 EMI SIG meeting and is integrated into SCAPA activities including the SCAPA teleconferences (CLOSED).

AI No.	Description	1/1/05 Status	12/31/05 Status
04-52	Central Toolbox Registry-CAM WG Integration	The CAM WG toolbox effort is fully integrated with the Registry. Good dialogue with Debra Sparkman. The latest draft of DOE O 414.1C was released to REVCOM on December 21, 2004.	Cliff Glantz interfaced with the Central Registry through the DOE O 414.1D and DOE G 414.1-1 review process until they were issued in June 2005. Presently well-integrated with registry as SQA efforts have begun (CLOSED) .
04-53	EMI SIG Session on Effect of SQA Guidance on TEEL and HCN software	Begin detailed planning after SQA guidance is ready for review.	Session delayed until at least 2006 EMI SIG meeting.
04-54	EMI SIG Session on Biosafety	Cliff Glantz has contacted BSOs to determine interest. Session will be targeted at end of EMI SIG meeting so BSOs can attend SCAPA meeting next day.	EMI SIG Session on Biosafety took place at the 2005 EMI SIG Meeting (CLOSED) .
04-55	Chemical Exposure and Chemical Mixture support	Not yet begun.	Eduardo Donoso, PNNL intern, assisted in the SQA of the TEEL methodology (CLOSED) .
04-56	May 5, 2005 SCAPA Meeting Planning	Planning for the meeting has commenced. A draft agenda is targeted for February 2005.	SCAPA 2005 Meeting was a success with 46 attendees. A report was developed and posted on the website (CLOSED) .
04-57	CMM/HCN training at the EMI SIG meeting	Not yet begun.	HCNs and CMM part of May 2, 2005 PAC Workshop at EMI SIG meeting (CLOSED) .
04-58	Refrigerant TEELs for ASHRAE	Rocky Petrocchi will begin work while Doug Craig is on vacation. Doug Craig will finalize product when he returns.	ASHRAE pleased with results and these became part of the TEEL Revision 21 effort (CLOSED) .

Fourteen (14) of the antecedent action items were satisfied and closed in 2005, leaving 6 action items (03-08, 04-22, 04-23, 04-39, 04-44, and 04-53) that are being carried into 2006.

Fourteen (14) new SCAPA action items were opened in 2005. The following shows the status of the 2005 action items:

AI No.	Description	12/31/05 Status
05-01	UF ₆ Hydrolysis and TEELs	Modeling issue with toxicology overtones, complicated by the hydrolysis reaction of uranium hexafluoride into uranyl fluoride and hydrofluoric acid. Jamison has developed a draft White Paper and will develop full paper for ANS 9 th Topical Meeting on EP & R. HGSYSTEM-UF ₆ , RASCAL, ALOHA and EPICODE modeling by Martin and Baker continuing, but will not be part of Jamison paper. Portsmouth requesting analysis to be completed by December 31, 2005.
05-02	Chemical PAC Training	EMI SIG Session on Biosafety took place at the 2005 EMI SIG Meeting (CLOSED).
05-03	SQA Plan for TEEL and CMM Software	PNNL summer intern developed a report that concluded code is executing properly. SCAPA has discussed report. There still is a need for a software custodian, procedure for updating, and other documentation.
05-04	Candidate Toolbox Models for Central Registry	DOE O 414.1C and DOE G 414.1-1 issued and registry videoconferences to rollout order requirements held. Hanford, as well as Central Toolbox Registry, has determined Level B is applicable to EP & R codes. DOE/NNSA SQA self assessments and candidate toolbox models to be identified by April 2006.
05-05	NARAC Ingestion of ARCON96	NA-41 confirmed the merits of this task on 5/3/05 at the SCAPA Program Review Meeting. NARAC has not provided any feedback yet although its representatives appeared to support the concept.
05-06	Implementation of SCAPA Position Paper and SCAPA Support Templates	Position paper and support request templates sent to NA-41 for review on May 10, 2005.
05-07	Uniform DCFs	Wayne Davis drafted a statement of problem and will be presenting a paper at the ANS 9 th Topical Meeting on EP & R. Strong DOE/NNSA-wide interest in the issue.
05-08	9 th Topical Meeting on EP & R	Seven SCAPA-led sessions will occur during February 12-15, 2006 Topical Meeting. Full papers are under review.
05-09	TEEL Documentation and Database	Development of TEEL methodology and use of TEELs progressing. Drafts of Sections 2 (Risk Management), 3 (TEEL Methodology), and 4 (Review Process) have been reviewed. First draft of entire document targeted for 11/15/05.

AI No.	Description	12/31/05 Status
05-10	TEELs Revision 22 Development	There are almost 400 new chemicals that require TEEL development and DOE/NNSA site representatives requested to provide additional chemicals. Development of Revision 22 TEELs has begun and is targeted to be completed by the end of FY06.
06-01	Central Registry SQA and Toolbox Implementation	Not yet begun.
06-02	NARAC Code Application for EPHAs	Not yet begun.
06-03	Biosafety Working Group Teleconferences	Not yet begun. First teleconference will be scheduled during the first or second week of December 2005.
06-04	EMI SIG-SCAPA 2006	Not yet begun.

One (1) of the 2005 action items was satisfied and closed in 2005, leaving thirteen (13) action items that will be carried into 2006.

On December 31, 2005, nineteen (19) action items were still open. This includes one (1) action item from 2003, five (5) action items from 2004 and thirteen (13) action items from 2005.

6.0 2006 Activities and Priorities

Prioritization of the following projects and activities will be solely based on NA-41 guidance at the biannual SCAPA program meetings, and at other meetings and teleconferences with SCAPA leadership.

6.1 Chemical Exposures WG

The Chemical Exposures WG activities for 2006 are as follows:

1. Complete Revision 22 TEELs, post them on the SCAPA web page and include this information in the searchable TEELs data base;
2. Begin development of Revision 23 TEELs on new chemicals submitted by DOE/NNSA sites;
3. Complete TEEL Derivation Methodology paper and publish it in an appropriate journal;
4. Undertake full SQA effort on TEEL methodology macros and develop all documentation identified in DOE G 414.1-1. Establish a software custodian and develop a procedure for updating the macros;
5. Complete TEEL methodology documentation effort;
6. Present TEEL methodology paper at the 9th EP & R Topical Meeting;
7. Track the progress of the ERPGs and AEGLs;
8. Develop PAC training if NNSA/DOE sites show sufficient interest, and,
9. Emerging chemical exposure technical projects, as appropriate.

6.2 Chemical Mixtures WG

The Chemical Mixtures WG activities for 2006 are as follows:

1. Complete Revision 20 HCNs and post them on the SCAPA web page;
2. Begin development of Revision 21 HCNs on the new TEEL Revision 22 chemicals;
3. Complete HCN Methodology paper and publish it in an appropriate journal;

4. Undertake full SQA effort on HCN methodology and develop all documentation identified in DOE G 414.1-1. Establish a software custodian and develop a procedure for updating the macros;
5. Complete the HCN elements of the TEEL methodology documentation effort;
6. Present Mixture Methodology and HCN paper at the 9th EP & R Topical Meeting; and,
7. Emerging chemical mixture technical projects, as appropriate.

6.3 Consequence Assessment Modeling WG

The Consequence Assessment Modeling WG activities for 2006 are as follows:

1. Distribute NARAC technical basis documents to DOE/NNSA sites once they are received;
2. Establish WG priorities;
3. Develop a DOE/NNSA SQA self assessment strategy and candidate toolbox models;
4. Oversee the process of establishing new toolbox codes and interface with the DOE/EH Central Toolbox Registry, as appropriate;
5. Present uranium hexafluoride paper at 9th EP & R Topical Meeting and finalize the White Paper that will provide guidance for applicable DOE/NNSA emergency management programs;
6. Interface with NARAC through its advisory group and assist it with its issue resolution and its relationship with SCAPA, as appropriate;
7. Present DCF paper at 9th EP & R Topical Meeting and finalize the White Paper that will provide guidance for applicable DOE/NNSA emergency management programs;
8. Track the progress of the revised EPA PAGs, and DHS Protective Action Levels (PALs);
9. Interface with the DMCC; and,
10. Emerging consequence assessment modeling projects, as appropriate.

6.4 Biosafety WG

The Biosafety WG activities for 2006 are as follows:

1. Continue Biosafety WG teleconferences that will mature the work of the new WG;
2. Provide comments on the Biosafety EMG;
3. Continue involvement in SCAPA and EMI SIG meetings; and,
4. Emerging biosafety projects, as appropriate.

6.5 Web Page

SCAPA webpage activities for 2006 will include:

1. Addition of a *Biosafety Working Group* webpage;
2. Addition of a SQA webpage;
3. Update the *Consequence Assessment Modeling Toolbox* webpage;
4. Update the *TEELs* webpage; and,
5. Modification and enhancement to the *SCAPA News* webpage.

7.0 Conclusion

The SCAPA program had a very successful year in 2005. A well-attended and broad-based SCAPA Meeting was held on May 5 in New Orleans, LA, and eight teleconferences were held throughout the year. Seventy-two individuals participated in some form in the program and a new biosafety WG was added. All NNSA/DOE sites appear to be showing strong interest in the SCAPA programs.

There are strong expectations for an even more productive year in 2006. The first teleconference has been scheduled for January 11, 2006 and the SCAPA Meeting has been scheduled for May 4, 2006 in Las Vegas, NV. There will be meetings of each SCAPA WG and the NARAC User Group at the EMI SIG Meeting and a special SCAPA session on SQA during the EMI SIG meeting.

8.0 ACRONYMS

The following is a list of acronyms used in this report:

A

AEGL	Acute Exposure Guideline Level
ALOHA	An atmospheric transport and dispersion code
ANS	American Nuclear Society
ANL	Argonne National Laboratory
ATL	Advanced Technology Laboratories
ARCON	Atmospheric Relative CONcentrations
ASHRAE	American Society for Heating Refrigeration & Air conditioning Engineers

B

BL	Biosafety Level
BNL	Brookhaven National Laboratory
BSO	Biosafety Officer

C

CA	California, Consequence Assessment
CAM	Consequence Assessment Modeling
CDC	Centers for Disease Control
CEWG	Chemical Exposure Working Group
CEMS	Comprehensive Emergency Management System
CMM	Chemical Mixture Methodology
CMWG	Chemical Mixture Working Group
CY	Calendar Year

D

DC	District of Columbia
DCF	Dose Conversion Factor
DMCC	DOE Meteorological Coordinating Council
DOE	Department of Energy
DOE/EH	DOE Office of Environmental Safety and Health

E

EH	Environmental Health
EMG	Emergency Management Guide
EMI SIG	Emergency Management Issues Special Interest Group
EOC	Emergency Operations Center
EPHA	Emergency Preparedness Hazard Assessment
EPICODE	An atmospheric transport and dispersion code
EP & R	Emergency Preparedness & Response
ERPG	Emergency Response Planning Guideline

F

FY	Fiscal Year
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G

G	Guide
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H

HCN	Health Code Number
HGSYSTEM-UF ₆	An atmospheric transport and dispersion code

I

ICRP	International Council on Radiation Protection
INL	Idaho National Laboratory

J

K

L

LANL	Los Alamos National Laboratory
LEL	Lower Explosive Limit
LBNL	Lawrence Berkeley National Laboratory
LLNL	Lawrence Livermore National Laboratory

M

M & O	Management and Operations
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N

NA-41	DOE Office of Emergency Management
NARAC	National Atmospheric Release Advisory Center
NM	New Mexico
NNSA	National Nuclear Security Administration
NV	Nevada

O

O	Order
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
OROO	Oak Ridge Operations Office

P

PA	Protective Actions
PAC	Protective Action Criteria
PAG	Protective Action Guide
PAL	Protective Action Level
PNNL	Pacific Northwest National Laboratory

Q

R

RASCAL	An atmospheric transport and dispersion code
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S

SAIC	Science Applications International Corporation
SC	South Carolina
SCAPA	Subcommittee on Consequence Assessment and Protective Actions
SNL	Sandia National Laboratory
SQA	Software Quality Assurance
SRNL	Savannah River National Laboratory
SRS	Savannah River Site

T

TAG	TEEL Advisory Group
TEEL	Temporary Emergency Exposure Limit
TRADE	Training Resource and Data Exchange
TX	Texas

U

URL Universal Resource Locator

V

W

WG Working Group
WGI Washington Group International
WSMS Washington Safety Management Solutions
WSRC Westinghouse Savannah River Company

X

Y

Z