

**SUBCOMMITTEE ON
CONSEQUENCE ASSESSMENT
AND PROTECTIVE ACTIONS
(SCAPA)**

**2007 ANNUAL REPORT
(UPDATED THROUGH 4/30/08)**

May 5, 2008

2007 SCAPA Annual Report (Updated through 4/30/08)

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1.0 Introduction

This compilation of information represents the third annual report of the programs associated with the Subcommittee for Consequence Assessment and Protective Actions (SCAPA).

1.1 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 on developing guidance and products for use in the CEMS.

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). 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.

Mission Statement

SCAPA supports the Office of Emergency Management (OEM) by developing and disseminating technical guidance, recommendations, and resources throughout the DOE community to improve emergency preparedness, consequence assessment capabilities, and the formulation of protective actions.

The goal of 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 of any hazardous radiological, chemical, or biological materials to the environment.

Membership and Organizational Structure

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 SCAPA is voluntary and is also extended to other Federal agencies having a need to participate.

The SCAPA Chair is a Federal employee or contractor appointed by the OEM. 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 are 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;
- identify additional requirements or the need for specific implementing guidance;
- develop or review implementing guidance and recommendations of special concern to the OEM, (e.g., Emergency Response Planning Guidelines (ERPG), Acute Exposure Guideline Levels (AEGL), Temporary Emergency Exposure Limits (TEEL), methodologies for dealing with chemical mixtures, and Protective Action Guidance;
- provide guidance on the development, deployment, and implementation of consequence assessment models;
- identify or develop research needs or issues related to improvements in emergency management of biological, chemical, and nuclear operational emergencies;

- perform specific reviews and provide technical recommendations as requested by the OEM or the EMI SIG;
- provide an information-sharing forum to promote consistency throughout the DOE/NNSA complex for the emergency management of releases of hazardous materials; and,
- 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, the first full week in May. Additional meetings (e.g., via conference calls or video-teleconferences) are arranged by the OEM, as needed.

Following each meeting, succinct minutes, including issues identified, are developed and submitted by the Chair to the OEM within 20 working days. Approved minutes are posted on the web page.

1.2 Annual Reports

Annual reports, describing SCAPA activities, are prepared each year that the program is active. This report is prepared at the end of each year and updated in April of each year for presentation to the EMI SIG Steering Committee.

2.0 2007 Annual Meeting and Teleconferences

2.1 2007 Annual Meeting

The DOE SCAPA convened its annual meeting in San Antonio, TX, on Thursday, May 10, 2007 and Friday, May 11, 2007, in conjunction with the EMI SIG meeting. Fifty-one individuals from both the public and private sectors participated in this year's SCAPA meeting.

The primary purpose of the annual SCAPA meeting is to continue to provide a forum for SCAPA members and associates to review accomplishments, products, and projects completed since the last SCAPA meeting held on May 5, 2006 in Las Vegas, NV; and, to discuss present and future mission and implementation. Several technical presentations of interest were delivered to the membership, including those from the now five active SCAPA Working Groups.

Dave Freshwater, the (then) Acting SCAPA Federal Official from the Office of Emergency Management Policy (NA-41), welcomed everyone and provided an update on changes in NA-41. Carl Mazzola reviewed the important points that were discussed and decisions that were made during the 2006 SCAPA Meeting, and briefly discussed the report on the 2006 Las Vegas, NV SCAPA meeting.

Carl recapped the meeting, reviewed the status of the open action items and their proposed disposition, and indicated when the next SCAPA meeting would be conducted. There were several new action items identified during the meeting. All existing action items will be periodically reviewed by NA-41 through future conference calls. Each Working Group (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 Reston, VA on May 8-9, 2008.

A meeting report was developed and can be accessed at the following address: <http://www.ornl.gov/emi/scapa/Meeting-2006/meetinghighlights.htm>.

2.2 2007 Teleconferences

Five SCAPA teleconferences took place in 2007 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://www.ornl.gov/emi/scapa/news.htm>.

These teleconferences took place on the following dates in 2007:

- January 16: 38 individuals took part;
- March 22: 31 individuals took part;
- July 12: 27 individuals took part;
- September 20: 25 individuals took part;
- December 4: 24 individuals took part.

Two additional teleconferences took place on the following dates in 2008:

- January 31, 2008: 25 individuals took part; and,
- March 31, 2008: 23 individuals took part.

Ninety-two different individuals participated in at least one of the SCAPA teleconferences or the SCAPA Meeting during the January 1, 2007 through April 30, 2008 period.

3.0 Working Group Accomplishments

The five SCAPA WGs were involved in a total of 33 projects in the January 2007-April 2008 period.

3.1 Chemical Exposures Working Group (CEWG)

The CEWG was involved in ten specific projects from January 2007 through April 2008. The following summarizes each effort and correlates it to its action item (AI):

1. **AI 04-53:** Session on Effect of Software Quality Assurance (SQA) Guidance on Protective Action Criterion (PAC) and Health Code Number (HCN) software delayed until 2009 EMI SIG meeting or later. Details to emerge after PAC SQA effort and updated PAC methodology documentation are completed. Will be tracked with AI 05-03.
2. **AI 05-03:** The PAC SQA effort is active and the updated Temporary Emergency Exposure Limit (TEEL) Documentation and Database document is complete. A Software custodian, updated procedure, other SQA documentation, and Configuration Management Plan (CMP) are needed. PAC development procedure in revision and various Quality Assurance (QA) procedures, as well as SQA Plan, under development. A CMP is under development, as well as other SQA documentation for PAC and Chemical Mixture Methodology (CMM) efforts.
3. **AI 05-09:** The development of the PAC Documentation and Database document was completed.
4. **AI 05-10:** PACs Revision 22 was published in April 2007;
5. **AI 06-16:** A request was made for columns for National Fire Protection Association (NFPA) codes, dispersibility, and vapor pressure at 25 degrees Centigrade. These are screening criteria that will be included in the PAC Revision 22 publication to assist the DOE/NNSA sites in its hazards screening work. The request was received and forwarded to Advanced Technologies Laboratories (ATL) to determine what it would take to include this information in the searchable TEELs data base, thereby completing this activity.
6. **AI 07-02:** Revision 23 PACs were completed and posted in August 2007; Revision 24 PACs are under development.
7. **AI 07-03:** PAC data selection rules were placed on the SCAPA website.
8. **AI 07-09:** Two Emergency Management Update (EMU) newsletters were issued.
9. **AI 07-11:** A succession plan for the CEWG and Chemical Mixtures Working Group (CMWG) was developed and gaps are being filled.

10. **AI 07-16:** It was determined that PACs should be revised with each Acute Exposure Guideline Level (AEGL) and Emergency Response Planning Guideline (ERPG) annual revision and rolled into future planning. This AI is completed.

3.2 Chemical Mixtures Working Group (CMWG)

The CMWG was involved in eight specific projects from January 2007 through April 2008. The following summarizes each effort and correlates it to its AI.

1. **AI 06-07:** NA-41 directed SCAPA to address the following issue:

“The mixture methodology is being applied to source terms involving the release of dissimilar materials from separate and multiple containers. The basic assumption, in order to apply the mixture methodology, is that the materials are released simultaneously, and a plume is formed that represents a mixture of the materials. This is a very conservative assumption, but may be the only one that will yield consequence estimates. It is very important that the limits on the application of this methodology be addressed; assuming, of course, that any exist. Also, in a practical sense, how should the results of the mixture methodology best be used in emergency planning?”

A response was prepared and accepted by NA-41.

2. **AI 06-09:** A small working group studied the need for the development of a standard hazards rating index. NFPA 704 was compared with Sax Hazard Rating (SAX) and several other hazard rating systems.
3. **AI 06-10:** The CMM was not being used by safety analysts in their Documented Safety Analyses (DSAs), which is a non-conservative practice. Through a relationship with DOE Office of Corporate Safety Programs (HS-31), this gap was closed by developing a White Paper which led to its inclusion in DOE STD-1189 *Integration of Safety into the Design Process*, Appendix B, which was published on March 31, 2008.
4. **AI 06-14:** Revision to the automated CMM Excel workbook to include the expanded list of acute HCNs was completed.
5. **AI 06-15:** The HCN effort is continuing, but needs additional resources to reduce a backlog of approximately 700 chemicals. A future intern will play an important role in reducing the HCN backlog. Rocky Petrocchi has revised the HCN development procedure. A CMM workbook has been revised with a User Manual and both of these are available on the EMI SIG web page.
6. **AI 07-04:** A CMM Workbook was placed on the SCAPA website and a tested workbook is now posted on the web site.

7. **AI 07-14:** The HCN methodology technical paper continues to be developed, and, when completed, will be published in the *Journal of Applied Toxicology*, or other peer-reviewed journal. A draft for SCAPA review is expected in December 2008.
8. **AI 07-15:** DOE STD-1189 addresses integrating safety into design. While emergency planners may be called upon to work with facility design teams or with safety basis teams, this standard does not directly apply to emergency management programs. Accordingly, White Papers or Frequently Asked Questions (FAQs) on this standard fall outside of SCAPA responsibility, which is the basis of closing AI 07-15.

3.3 Consequence Assessment Modeling Working Group (CAMWG)

The CAMWG was involved in nine specific projects from January 2007 through April 2008. The following summarizes each effort and correlates it to its AIs.

1. **AI 03-08:** The National Atmospheric Release Advisory Center (NARAC) has significantly added to its technical documentation. Many reports, papers and other documents are now available on the NARAC public web site. Additional documentation is available to authorized NARAC Web users after log-in. Additional documentation will be added continually as new documents become available or existing documents are updated.
2. **AI 04-39:** SCAPA toolbox and NARAC User Group issues were addressed; CAMWG priorities were established.
3. **AI 05-05:** At the 2005 EMI SIG NARAC User Group meeting, it was suggested that NARAC include Atmospheric Relative Concentrations (ARCON96) to provide the capability of calculating radiological and chemical impacts at distances as close as 10 meters from the release point. NARAC determined that its architecture could not accommodate ARCON96.
4. **AI 05-07:** A need was identified to determine whether the International Council on Radiation Protection (ICRP)-30, ICRP-68/72, and ICRP-90 Dose Conversion Factors (DCFs) are applicable to Emergency Preparedness Hazard Assessments (EPHAs) and consequence assessment models. SCAPA developed a position and DOE/EH-52 (i.e., Dr. Joel Rabofsky) concurrence was obtained to have all DOE/NNSA sites use the ICRP-68/72 dosimetry, which is also being adopted by the Environmental Protection Agency (EPA) in its latest draft Protective Action Guides (PAGs); activities accomplished goal.
5. **AI 06-01:** The toolbox effort was fully integrated with the DOE/EH Central Toolbox Registry, and DOE Order 414.1C *Quality Assurance* and DOE Guide 414.1-4 *Safety Software Guide for Use with 10 CFR 830, Subpart A, Quality Assurance Requirements, and DOE Order 414.1C Quality Assurance* were

issued in June 2005. Hanford, as well as Central Toolbox Registry, has determined that Level B is applicable to Emergency Preparedness and Response (EP&R) consequence assessment and EPHA codes.

An SQA self-assessment strategy and a listing of candidate toolbox models were discussed at a special EMI SIG Session on SQA. The SCAPA Toolbox will require a graded level of SQA. SCAPA Toolbox candidates include: NARAC, ARCON96, 2DPUF (A sequential Gaussian puff model.), Air Pollutant Graphical Environmental Monitoring System (APGEMS), Clean Air Act Assessment Package-1988 (CAP88PC), and RASCAL.

In addition, SQA Guidelines and consequence assessment modeling are being performed by Alpha TRAC through their Data Quality Objectives (DQOs) effort. Work is based on meeting DOE O 414.1C and DOE G 414.1-4, with an emphasis on configuration management, Verification and Validation (V&V) and preparation of a SQA Plan. Once SQA procedures are available, SQA work can move forward in earnest.

With respect to the Central Registry, HOTSPOT gap analysis was issued in April, 2007. HOTSPOT is expected to close five critical recommendations to be in Central Registry toolbox by September 2008. A later version of the NRC dispersion model MACCS2 may soon be submitted to the Registry to close the gaps in the gap analysis. Computer Assisted Protective Action Recommendation System (CAPARS) may be considered for the Central Registry toolbox.

6. **AI 06-02:** DOE/NNSA sites were encouraged not to use NARAC for EPHA preparation through a NA-41 memorandum.
7. **AI 06-11:** Sandia national laboratory-New Mexico (SNL-NM) was assisted in benchmarking its Consequence Assessment Team (CAT). A questionnaire was developed and responses from 13 DOE/NNSA sites were received. Results were presented at the 2007 EMI SIG Meeting.
8. **AI 07-10:** Continued to interface with EPA on its development of a revision to the PAGs; activity completed until PAGs are published, which will be tracked under a new AI.
9. **AI 07-12:** Work on a CAMWG succession plan was subsequently determined to be unnecessary.

3.4 Biosafety WG

The BWG was involved in four specific projects from January 2007 through April 2008. The following summarizes each effort and correlates it to its AIs:

1. **AI 06-06:** NA-41 directed SCAPA to address the following issue:

“The transport and dispersion of biological agents/toxins released from DOE/NNSA biosafety facilities was left an open subject in the Biosafety Emergency Management Guide (BioEMG). What models are available and appropriate for predictions, especially for lab size source terms, and NOT production quantities? What are the limits to the use of Gaussian models? What other modeling tools are available or being developed? Because a level of severity will likely not be available for defining a Protective Action Criterion (PAC), how will modeling results best be used?”

This issue was discussed at an EMI SIG Biosafety Working Group (BWG) meeting. NA-41 has stated the importance of this task to fill a gap in the BioEMG. Indoor dispersion models [i.e., Multizone Airflow and Contaminant Transport Analysis Software (CONTAM), Conjunction of Multizone Infiltration Specialists (COMIS), Simulation Tool Kit for indoor Air Quality and Inhalation Exposure (IAQX)] are being evaluated and a literature search initiated.

Idaho National Laboratory (INL) has made preliminary runs with CONTAM code and a presentation will be made at the 10th EP&R Topical Meeting. Lawrence Berkeley National Laboratory (LBNL) also has a mature indoor modeling capability (COMIS), which is highly dependent on building configuration and Heating, Ventilating and Air Conditioning (HVAC) design.

Dina Matz volunteered to develop a SCAPA project plan to move forward with this project which may result in the development of infective dose values, or ranges, for various infectious agents.

2. **AI 06-08:** BWG charter was developed and approved by NA-41.
3. **AI 06-17:** Interfaces with the DOE nanotechnology initiative (NNI) have been established.
4. **AI 07-07:** NARAC is developing documentation that has been prepared regarding NARAC biowarfare modules with BWG. This work is being combined with AI 06-06.

3.5 Source Term Working Group (STWG)

The STWG was involved in two specific projects from January 2007 through April 2008. The following summarizes each effort and correlates it to its AIs:

1. **AI 06-05:** The STWG was populated.
2. **AI 06-12:** At the EMI SIG STWG meeting, there was discussion that there is a lot of source term information in the literature and various sites were doing source term work. However, none of this information was being shared or in an easily accessible document. This activity was determined to be too expensive and other Federal agencies were not interested in cost-sharing.

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 the January 2007-April 2008 period. These included:

- Modifications to the SCAPA main page
- Modifications to the *SCAPA News* webpage
- Modifications to the PAC webpage
- Modifications to the DMCC webpage
- Modifications to the STWG webpage
- Revisions to the SCAPA contact list and updates to the reference link webpage

5.0 Action Items

On January 1, 2007, there were 24 open SCAPA AIs. The following shows the progress on each of these antecedent action items during the January 2007-April 2008 period:

AI No.	Description	1/1/07 Status	4/30/08 Status
03-08	Acquire NARAC technical basis documents to support future DOE/NNSA Consequence Assessment (CA) modeling efforts	List of NARAC papers provided in late-January 2004. Awaiting publication of NARAC technical documents.	Activity was completed. CLOSE.
04-23	HCNs for Revision 20 TEELs	TEELs Revision 20-22 HCN effort has backlog of over 900 chemicals.	Activity will be tracked with AI 06-15. CLOSE.
04-39	Firm up consequence assessment issues for CAM WG	SCAPA toolbox and NARAC User Group issues discussed at EMI SIG Session on SQA.	Activity will be tracked with AI 06-01. CLOSE.
04-44	Development of a HCN methodology technical paper	Submission to <i>Journal of Applied Toxicology</i> for publication. Draft for SCAPA review by early 2007.	Activity will be tracked as AI 07-14. CLOSE.
04-53	EMI SIG Session on "Effect of SQA Guidance on TEEL and HCN software"	Session delayed until 2007 EMI SIG meeting. Details to emerge after TEEL SQA effort and updated TEEL methodology documentation are completed.	Activity will be tracked with AI 05-03. CLOSE.
05-03	SQA Plan for TEEL and CMM Software	Pacific Northwest National laboratory (PNNL) summer intern report concluded code executing properly. Software custodian, a procedure for updating, and other SQA documentation are still outstanding.	Report concluded code executing properly. Software custodian, an updated procedure, other SQA documentation, and Configuration Management Plan (CMP) are needed. PAC SQA documentation is virtually complete. PAC development procedure in revision and various QA procedures, as well as SQA Plan and CMP are under development.
05-05	NARAC Ingestion of ARCON96	NARAC received information on ARCON96 and is moving forward in conjunction with another project.	NARAC determined that its architecture could not accommodate ARCON96. CLOSE.
05-07	Uniform DCFs	Strong DOE/NNSA-wide interest. EH-52 concurrence received. EPA using ICRP 68/72. White paper to be issued shortly.	White Paper was not developed. However, activity accomplished goal. CLOSE.

AI No.	Description	1/1/07 Status	4/30/08 Status
05-09	TEEL Documentation and Database	Second draft TEEL Documentation and Database document issued for comments. Publication target is January 2007.	TEEL Documentation and Database document has been issued. CLOSE.
05-10	TEELs Revision 22 Development	360 new chemicals had TEELs developed and the quality assurance has been completed. TEELs Revision 22 will be issued in January 2007 after the 2006 AEGLs and ERPGs have been finalized. This will increase the total number of chemicals with TEELs to 3,305.	TEELs Revision 22 was published in April 2007. CLOSE.
06-01	Central Registry SQA and Toolbox Implementation	NARAC, ARCON96, 2DPUF, APGEMS, CAP88PC, and RASCAL are SCAPA Toolbox candidates. SCAPA Toolbox will require a graded level of SQA. SCAPA web page updated to include SQA web page and links. Moving forward with HOTSPOT as candidate 8 th toolbox model. HOTSPOT decision by January 2007.	<p>SCAPA Toolbox: SCAPA Toolbox will require a graded level of SQA. NARAC, ARCON96, 2DPUF, APGEMS, CAP88PC, and RASCAL are SCAPA Toolbox candidates. NA-41 emphasized that this effort should be prioritized. SQA Guidelines and consequence assessment modeling being performed by Alpha TRAC through their Data Quality Objectives (DQOs) effort. Work is based on meeting DOE O 414.1C and DOE G 414.1-4, with an emphasis on configuration management, V&V and preparation of a SQA Plan. Product is essentially complete. Once SQA procedures are available, SQA work can move forward in earnest.</p> <p>Central Registry: HOTSPOT gap analysis issued April, 2007. HOTSPOT to close 5 critical recommendations to be in Central Registry toolbox by September 2008. A later version of MACCS2 may soon be submitted to the Registry to close the gaps in the gap analysis. CAPARS may be considered for Central Registry toolbox.</p>

AI No.	Description	1/1/07 Status	4/30/08 Status
06-02	NARAC Code Application for EPHAs	NARAC representatives acknowledged that for stable low wind speed conditions, NARAC gives more accurate, but less conservative, Relative Concentration (X/Q) values and therefore should not be used for EPHAs. NARAC <i>iClient</i> documentation makes this disclaimer. DOE/NNSA sites will be encouraged to not use NARAC for EPHA preparation through a NA-41 memorandum.	Activity completed. CLOSE.
06-05	Source Term Working Group	Productive STWG meeting took place at 2006 EMI SIG Meeting. Several source-term related issues will be addressed. Working group is being populated and first teleconference occurred in November 2006.	Activity completed. CLOSE.
06-06	Transport and Dispersion of Biological Agents/Toxins for BioEMG	Issue discussed at BWG meeting at EMI SIG. NA-41 has stated the importance of this task to fill a gap in the Biosafety EMG. Work has been initiated and ID ₅₀ values from Army Blue Book and the CDC website appear to be good starting points.	Indoor dispersion models (i.e., CONTAM, COMIS, IAQX) being evaluated and a literature search initiated. INL has made preliminary runs with CONTAM code and a presentation will be made at the 10 th EP&R Topical Meeting. LBNL also has a mature indoor modeling capability (COMIS), which is highly dependent on building configuration and HVAC design. Dina Matz volunteered to develop SCAPA project plan to move forward with this project which may result in the development of infective dose values, or ranges, for various infectious agents.
06-07	Use of mixture methodology results in emergency planning	A response was provided which is under NA-41 review.	NA-41 accepted the response. CLOSE.
06-08	Develop Biosafety WG Charter	A draft charter is being sent to NA-41 for approval.	Activity completed. CLOSE.
06-09	Standardization of Hazard Ratings	NFPA 704 has been compared with Sax Hazard Rating (SAX) and significant differences have been determined. Comparison with other hazards rating indices has been completed.	Comparison has been completed. NA-41 continues to endorse NFPA 704 guidance. CLOSE.

AI No.	Description	1/1/07 Status	4/30/08 Status
06-10	Use of CMM by safety analysts	SCAPA discussed with Dick Englehart, DOE/HSS-21.	Through efforts with Dick Englehart, HS-21, the CMM is endorsed in DOE STD-1189 Appendix B. DOE STD-1189 was published on March 31, 2008. CLOSE.
06-11	Benchmarking Consequence Assessment Team (CAT)	Benchmarking program information will be provided. SNL has developed questionnaire to be used to supplement benchmarking work. Questionnaire has been sent out to DOE/NNSA sites and some responses have been received.	CAT benchmark established with 13 sites providing input. Presented at EMI SIG meeting. CLOSE.
06-12	Source Term Compendium	Initial work has begun.	Cost was too high and other Federal agencies were uninterested in cost-sharing. CLOSE.
06-14	Revisions to CMM require revisions to the CMM Excel file software.	Initial work has begun.	Revisions completed. CLOSE.
06-15	Revisions to Existing HCNs using Revised CMM HCN development procedure	Work will be initiated after AI 04-23 is complete.	HCN effort needs additional resources to reduce backlog of approximately 700 chemicals. Future intern should play an important role in reducing HCN backlog. Rocky Petrocchi has revised the HCN development procedure. CMM workbook has been revised with User Manual and both available on EMI SIG web page.
06-16	Additional information in TEEL documents and databases	Although no commitment to do this with respect to the TEELs Revision 22 effort, ATL was contacted to determine what it would take to include this information in searchable TEELs data base.	Activity completed. CLOSE.
06-17	Interface with DOE nanotechnology initiative	BWG will discuss its next conference call.	Interface with DOE nanotechnology initiative established. CLOSE.

Twenty of the antecedent action items were satisfied and closed in 2006 leaving just four remaining action items (i.e., 05-03, 06-01, 06-06, and 06-15) that were carried into 2008.

Sixteen new SCAPA action items were opened in 2007. The following shows the status of the 2007 action items:

AI No.	Description	4/30/08 Status
07-01	At the May 2007 SCAPA Program Review Meeting, NA-41 indicated that the SQA DOE Order was being revised and that selected SCAPA members should assist in its review.	Begin work when DOE O 414.1D reaches Rev Com. CLOSE.
07-02	PACs Revision 24 effort began in September 2007.	American Industrial Hygiene Association (AIHA) has published the 2008 ERPG revisions. On April 11, 2008, NA-41 directed that the start of the process to publish Revision 24. It will contain the new and revised AEGLs and ERPGs as well as the newly developed TEELs requested for chemicals submitted to NA-41.
07-03	At the May 2007 CEWG/CMWG Meeting, it was determined to place PAC data selection rules on SCAPA website.	Activity completed. CLOSE.
07-04	At the May 2007 CEWG/CMWG Meeting, the automated CMM workbook was discussed. A beta version was placed on the website and SCAPA members will be requested to test it.	CMM workbook tested and posted on web site. CLOSE.
07-05	At the May 2007 CEWG/CMWG Meeting, Area Location of Hazardous Atmospheres (ALOHA) developer asked whether earlier TEEL values that have been replaced by ERPG and AEGL values, closely matched these values.	Activity cancelled. CLOSE.
07-06	At the May 2007 CAMWG Meeting, Chuck Hunter would share information that SRNL has on its Regional Atmospheric Modeling System/Lagrangian Particle Dispersion Model (RAMS-LPDM) model and its verification and validation with SRS field studies.	No activity in 2007. Presented at the March 2008 topical meeting on Emergency Preparedness & Response. CLOSE.
07-07	At May 2007 BWG Meeting, John Nasstrom to share documentation that has been prepared regarding NARAC biowarfare modules with working group.	Activity combined with AI 06-06. CLOSE.
07-08	At the May 2007 BWG Meeting, Frank Roberto committed to assist in resolution of Lawrence Livermore National Laboratory (LLNL) comments and ensure coordination of final BWG review on upcoming revised Biosafety EMG.	Activity completed. CLOSE.
07-09	At the May 2007 TAG Meeting, Tom Tuccinardi indicated Emergency Management Update (EMU) newsletter was well-received and a follow-up EMU will be prepared.	Activity completed. CLOSE.
07-10	At the May 2007 SCAPA Meeting, EPA presented the progress on the EPA-400 PAG revision. SCAPA will interface until its targeted December 2007 publication.	When the EPA PAGs are published, this activity will be started under a new AI. CLOSE.
07-11	At the May 2007 SCAPA Program Meeting, NA-41 indicated a need to prepare a succession plan for the CEWG and CMWG.	Succession plan completed. CLOSE.

AI No.	Description	4/30/08 Status
07-12	During the November 2007 SCAPA Program Meeting, the need to prepare a succession plan for the CAMWG was identified.	It was subsequently determined that a succession plan is unnecessary. CLOSE.
07-13	During the November 2007 SCAPA Program Meeting, it was determined that the STWG needed a chairman that would lead the STWG forward.	A chair will come from STWG membership when activities develop for the STWG. CLOSE.
07-14	During the November 2007 SCAPA Program Meeting, it was determined that the HCN technical paper will take a lower priority than AI 06-15.	CMM HCN technical paper targeted for end of CY08.
07-15	During the November 2007 SCAPA Program Meeting, it was determined that a White paper on the impact of CMM on upcoming DOE STD-1189 needs to be undertaken, as CMM is discussed in Appendix B of that pending DOE standard.	It was subsequently determined that DOE STD-1189 does not apply to emergency management programs. Therefore, White Papers or FAQs on DOE STD-1189 fall outside of the SCAPA scope. CLOSE.
07-16	During the November 2007 SCAPA Program Meeting, it was determined that PACs should be revised with each AEGL and ERPG annual revision.	PACs Revision 23A was to be issued January-February 2008 timeframe after new AEGLs and ERPGs have been released and integrated into PACs. Late issuance of ERPGs has delayed this. Future efforts will be tracked under AI 07-02. CLOSE.

Eight of the 2007 action items were satisfied and closed in 2007, leaving eight 2007 action items that will be carried into 2008. For the January 1, 2008-April 30, 2008 period, six of these action items were closed.

On April 30, 2008, only six action items were still open. This includes one action item from 2005, three action items from 2006, and two action items from 2007.

6.0 2008 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 2008 are as follows:

1. Develop session on effect of SQA guidance on PAC and HCN software for 2009 EMI SIG meeting or later;
2. Undertake full PAC SQA effort on TEEL methodology macros and develop all documentation identified in DOE G 414.1-4. Establish a software custodian and develop a procedure for updating the macros;
3. Complete Revision 24 PACs, post them on the SCAPA web page and include this information in the searchable TEELs data base;
4. Begin development of Revision 25 PACs on new chemicals submitted by DOE/NNSA sites;
5. Continue to track the progress of the ERPGs and AEGLs and integrate developments into PAC revision work activity;
6. Develop EMUs to announce future significant CWMG events; and,
7. Address emerging chemical exposure technical projects, as appropriate.

6.2 Chemical Mixtures WG

The Chemical Mixtures WG activities for 2008 are as follows:

1. Complete PAC Revision 20-24 HCN backlog and post them on the SCAPA web page;
2. Complete HCN Methodology technical paper and publish it in an appropriate journal;
3. Undertake full SQA effort on HCN methodology and develop all documentation identified in DOE G 414.1-4. Establish a software custodian and develop a procedure for updating the macros;
4. Continue discussions with safety analysts on the use of the CMM and ensure it is included in the final version of DOE STD-1189 (**COMPLETE**); and,

5. Address emerging chemical mixture technical projects, as appropriate.

6.3 Consequence Assessment Modeling WG

The Consequence Assessment Modeling WG activities for 2008 are as follows:

1. Continue to establish CAMWG priorities;
2. Refine the DOE/NNSA SQA self-assessment strategy and candidate toolbox models;
3. Oversee the process of establishing new toolbox codes and interface with the DOE/EH Central Toolbox Registry, as appropriate;
4. Interface with NARAC through its advisory group and assist it with its issue resolution and its relationship with SCAPA, as appropriate;
5. Track the progress of the revised EPA PAGs, and Department of Homeland Security (DHS) Protective Action Levels (PALs);
6. Develop sessions for the 10th EP&R Topical Meeting which will be held in Albuquerque, NM in March 2008 (**COMPLETE**);
7. Plan and execute the 2008 EMI SIG, DOE Meteorological Coordinating Council (DMCC), and SCAPA meetings;
8. Interface with the DMCC; and,
9. Address emerging consequence assessment modeling projects, as appropriate.

6.4 Biosafety WG

The Biosafety WG activities for 2008 are as follows:

1. Continue periodic BWG teleconferences that will mature its work;
2. Continue BWG involvement in SCAPA and EMI SIG meetings;
3. Develop a response to NA-41 issue on the limits of Gaussian models relative to the transport and dispersion of bioagents and bioweapons;
4. Interface, as appropriate, with DOE nanotechnology initiatives;
5. Work with NARAC regarding biowarfare modules; and,

6. Address emerging biosafety projects, as appropriate.

6.5 Source Term WG

The Source Term WG activities for 2008 are as follows:

1. Address emerging source term projects, as appropriate.

6.6 Web Page

SCAPA webpage activities for 2008 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 was successful throughout the January 2007-April 2008 period. A well-attended and broad-based SCAPA Meeting was held on May 10-11 in San Antonio, TX, and eight teleconferences were held throughout the January 2007 through April 2008 period. The SCAPA meeting had the largest number of attendees (i.e., 51) in its 20-year history.

Ninety-two individuals participated in some form in the program during the January 2007 through April 2008 period, and four of the five WGs were active. All DOE/NNSA sites continue to show strong interest in the SCAPA programs, as evidenced by the number of individuals attending the SCAPA meeting and the teleconferences.

There are reasonably strong expectations for the continuation of a successful program for rest of 2008 and beyond. The SCAPA Meeting will take place on May 8, 2008 in Reston, VA and there will be meetings of each SCAPA WG and the NARAC User Group at the EMI SIG Meeting. Teleconferences will be continued on a bimonthly basis.

8.0 ACRONYMS

A

AEGL	Acute Exposure Guideline Level
AI	Action Item
AIHA	American Industrial Hygiene Association
ALOHA	Area Locations of Hazardous Atmospheres
ANS	American Nuclear Society
ANL	Argonne National Laboratory
APGEMS	Air Pollutant Graphical Environmental Monitoring System
ATL	Advanced Technology Laboratories
ARCON	Atmospheric Relative CONcentrations

B

BioEMG	Biosafety Emergency Management Guide
BNL	Brookhaven National Laboratory
BWG	Biosafety Working Group

C

CA	California, Consequence Assessment
CAMWG	Consequence Assessment Modeling Working Group
CAPARS	Computer Assisted Protective Action Recommendation System
CAP88	Clean Air Act Assessment Package-1988
CAT	Consequence Assessment Team
CDC	Centers for Disease Control
CEWG	Chemical Exposure Working Group
CEMS	Comprehensive Emergency Management System
CMM	Chemical Mixture Methodology
CMP	Configuration Management Plan
CMWG	Chemical Mixtures Working Group
COMIS	Conjunction of Multizone Infiltration Specialists
CONTAM	Multizone Airflow and Contaminant Transport Analysis Software
CSTC	Chemical Safety Topical Committee

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
DOE/HSS	DOE Office of Health Safety and Security
DHS	Department of Homeland Security

2DPUF A sequential Gaussian puff model
DQO Data Quality Objective
DSA Documented Safety Analysis

E

EFCOG Energy Facility Contractor Group
EMG Emergency Management Guide
EMI SIG Emergency Management Issues Special Interest Group
EMU Emergency Management Update
EOC Emergency Operations Center
EP Emergency Planning
EPA Environmental Protection Agency
EPHA Emergency Preparedness Hazard Assessment
EPICODE An atmospheric transport and dispersion code
EP&R Emergency Preparedness & Response
ERPG Emergency Response Planning Guideline

F

FAQ Frequently Asked Question
FY Fiscal Year

G

G Guide

H

HCN Health Code Number
HGSYSTEM-UF₆ An atmospheric transport and dispersion code
HOTSPOT An atmospheric transport and dispersion code
HVAC Heating, Ventilating, and Air Conditioning

I

IAQX Simulation Tool Kit for Indoor Air Quality and Inhalation Exposure
ICRP International Council on Radiation Protection
ID₅₀ Infectious Dose for 50 % of the population
INL Idaho National Laboratory

J

K

L

LA	Louisiana
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LLNL	Lawrence Livermore National Laboratory

M

MACCS2	NRC Dispersion Model
M&O	Management and Operations

N

NA-41	DOE Office of Emergency Management and Policy
NARAC	National Atmospheric Release Advisory Center
NFPA	National Fire Protection Association
NM	New Mexico
NNI	National Nanotechnology Initiative
NNSA	National Nuclear Security Administration
NOAA	National Oceanic and Atmospheric Administration
NV	Nevada

O

O	Order
OEM	Office of Emergency Management
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
OROO	Oak Ridge Operations Office
OST	Office of Safe Transport

P

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

Q

QA	Quality Assurance
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R

RAMS-LPDM	Regional Atmospheric Modeling System – Lagrangian Particle Dispersion Model
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RASCAL An atmospheric transport and dispersion code

S

SA Safety Analyst
SAIC Science Applications International Corporation
SAX Sax Hazard Rating
SC South Carolina
SCAPA Subcommittee on Consequence Assessment and Protective
Actions
SEI Shaw Environmental Incorporated
SNL Sandia National Laboratory
SQA Software Quality Assurance
SRNL Savannah River National Laboratory
SROO Savannah River Operations Office
SRS Savannah River Site
STD Standard
STWG Source Term Working Group

T

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

U

URL Universal Resource Locator

V

V&V Verification and Validation

W

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

X

X/Q Relative Concentration

Y

Z