EMERGENCY MANAGEMENT ROUNDUP

EXPECT THE UNEXPECTED

SCAPA 2007, Part IV:
Chemical Exposures and Chemical Mixtures

AEGLs Development Update

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Outline

- AEGL Definitions
- AEGL Developmental Process
- Peer Review Meetings
- AEGL Accomplishments
- Web Access
- Conclusions

AEGLs for Hazard Assessment

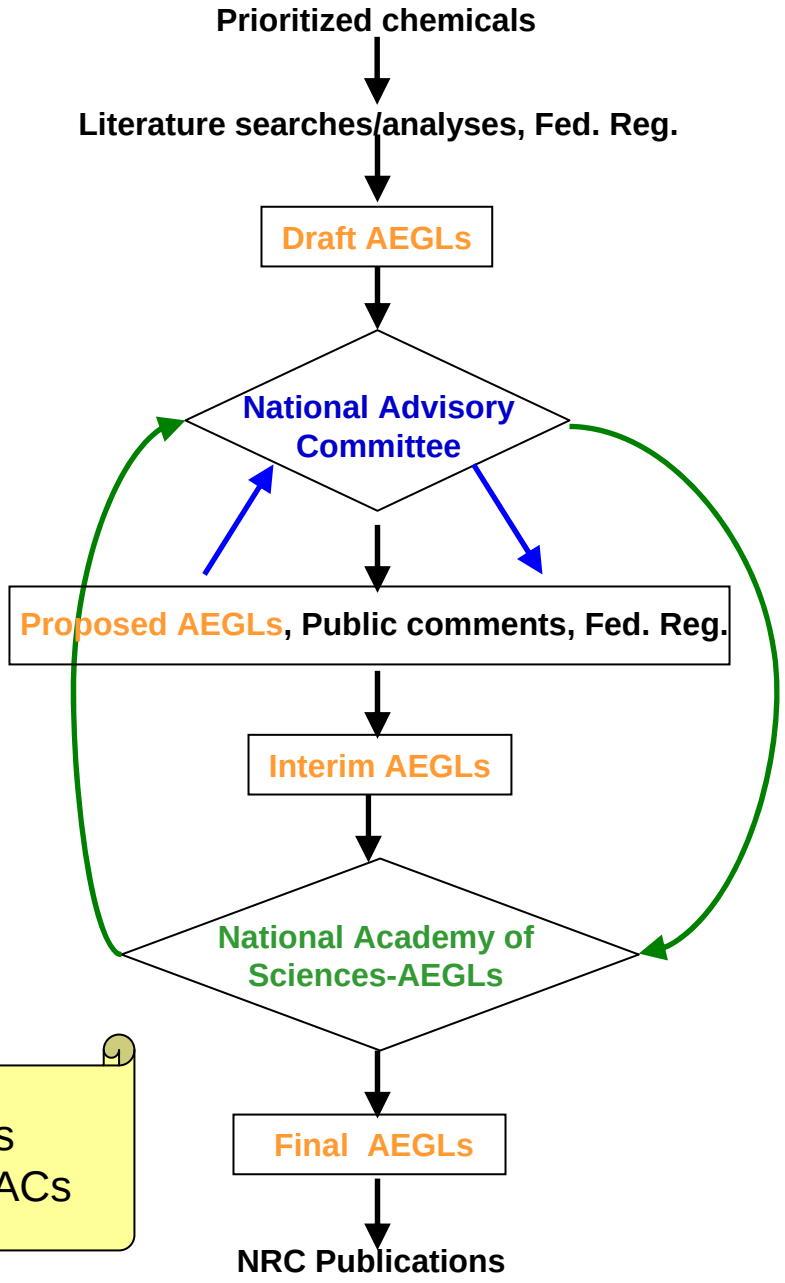
- **Describe the risk to humans (sensitive and susceptible subpopulations) resulting from once-in-a lifetime, or rare exposure to airborne chemicals.**

- **Include 3 severity levels: AEGL-1, AEGL-2, and AEGL-3 (nondisabling, disabling, and lethal).**

- **Cover 5 exposure periods:10, 30, and 60 min.; 4 and 8 h.**

- **Have 4 document development stages: Draft; Proposed; Interim; and Final.**

AEGLs Developmental Process



Interim and Final AEGLs are adapted by DOE, PACs

Scientific Peer Review Meetings (Public meetings)

- EPA, National Advisory Committee/AEGL
  - December 12-14, 2006, Alexandria, VA; No. 41
  - March 20-22, 2007, Irvine, CA; No. 42
  - June 20-22, 2007, The Netherlands; No. 43
  - No. 44, TBD

- NAS, Committee of Toxicology-AEGL Subcommittee

AEGL Accomplishments (4/12/2007)

- Final AEGLs: 31
- Interim AEGLs: 99
- Proposed AEGLs: 64
- Holding: 13

Web Access

- EPA AEGLs Program:
  - www.epa.gov/oppt/aegl/
- NRC Publication:
  - www.nap.edu

Conclusions

- AEGLs are acute, single exposure limits for the general population, including susceptible individuals, for chemical emergency planning, response, and prevention.
- The AEGL process is international and has consistent developmental procedures and stringent peer-review meetings to ensure science-based values.
- Final AEGLs: 31; Interim AEGLs: 99.
- DOE EMS adopts 1 hour AEGL values for protective action criteria (PAC) application.

Final AEGL Chemicals: 31

57-14-7	**1,1- Dimethyl hydrazine**
60-34-4	**Methyl hydrazine**
62-53-3	**Aniline**
74-90-8	**Hydrogen cyanide**
75-44-5	**Phosgene**
77-81-6	**Nerve Agent GA (Tabun)**
91-08-7	**2,6-Toluenediisocyanate**
96-64-0	**Agent GD (Soman)**
107-15-3	**Ethylene diamine**
107-44-8	**Agent GB (Sarin)**
108-91-8	**Cyclohexylamine**
329-99-7	**Agent GF**
505-60-2	**Sulfur Mustard**
509-14-8	**Tetranitromethane**
540-73-8	**1,2-Dimethyl hydrazine**
584-84-9	**2,4-Toluene Diisocyanate**
624-83-9	**Methyl isocyanate**
811-97-2	**HFC 134A**
1717-00-6	**HCFC 141b**
6423-43-4	**Propylene Glycol Dinitrate**
7647-01-0	**Hydrogen chloride**
7664-39-3	**Hydrogen fluoride**
7782-50-5	**Chlorine**
7783-81-5	**Uranium hexafluoride**
7784-42-1	**Arsine**
7790-91-2	**Chlorine trifluoride**
10049-04-4	**Chlorine dioxide**
19287-45-7	**Diborane**
50782-69-9	**Agent VX**
106602-80-6	**Otto Fuel (mainly Propylene Glycol Dinitrate 6423-43-4)**
163702-07-6 and 163702-08-7	**(HFE-7100) Methyl nonafluorobutyl ether (40%) and Methyl nonafluoroisobutyl ether (60%)**

Interim AEGL Chemicals: 99

50-00-0	Formaldehyde
56-23-5	Carbon tetrachloride
67-56-1	Methanol
67-64-1	Acetone
67-66-3	Chloroform
68-12-2	N,N-Dimethylformamide
71-43-2	Benzene
71-55-6	1,1,1-Trichloroethane
74-83-9	Methyl bromide
74-87-3	Methyl chloride
74-93-1	Methyl mercaptan
74-98-6	Propane
75-01-4	Vinyl chloride
75-05-8	Acetonitrile
75-07-0	Acetaldehyde
75-08-1	Ethyl mercaptan
75-09-2	Methylene chloride
75-15-0	Carbon disulfide
75-21-8	Ethylene oxide
75-55-8	Propyleneimine
75-56-9	Propylene oxide
75-77-4	Trimethylchlorosilane
75-78-5	Dichlorodimethylsilane
75-79-6	Trichloromethyl silane
75-86-5	Acetone cyanohydrin
77-78-1	Dimethyl sulfate
78-82-0	Isobutyronitrile
78-93-3	Methyl ethyl ketone
78-95-5	Chloroacetone
79-01-6	Trichloroethylene
79-04-9	Chloroacetyl chloride
79-10-7	Acrylic acid
79-11-8	Monochloroacetic acid
79-21-0	Peracetic Acid
79-36-7	Dichloroacetyl chloride
79-41-4	Methacrylic acid
80-62-6	Methyl methacrylate
98-82-8	Cumene
100-42-5	Styrene
100-47-0	Benzonitrile
106-89-8	Epichlorohydrin
106-97-8	Butane
106-99-0	1,3-Butadiene
107-02-8	Acrolein
107-11-9	Allyl Amine
107-12-0	Proprionitrile
107-14-2	Chloroacetonitrile
107-18-6	Allyl alcohol
107-20-0	Chloroacetaldehyde
107-30-2	Chloromethyl methyl ether
108-88-3	Toluene
108-95-2	Phenol
109-77-3	Malononitrile
110-00-9	Furan
110-54-3	Hexane
110-89-4	Piperidine
123-38-6	Propionaldehyde
123-73-9	trans-Crotonaldehyde
123-91-1	1,4-Dioxane
126-98-7	Methacrylonitrile
127-18-4	Tetrachloroethylene
140-88-5	Ethyl acrylate
141-32-2	n-Butyl acrylate
151-56-4	Ethyleneimine
156-59-2	cis-1,2-Dichloroethylene
156-60-5	cis- and trans-1,2-Dichloroethylene
302-01-2	Hydrazine
541-25-3	Lewisite 1, including mixtures with Lewisite 2 (CAS No. 40334-69-8) and Lewisite 3 (CAS No. 40334-70-1)
594-42-3	Perchloromethyl mercaptan
630-08-0	Carbon monoxide
1330-20-7	Xylenes
4170-30-3	cis-Crotonaldehyde
7446-09-5	Sulfur Dioxide
7446-11-9	Sulfur trioxide
7550-45-0	Titanium tetrachloride
7637-07-2	Boron trifluoride
7664-41-7	Ammonia
7664-93-9	Sulfuric acid
7697-37-2	Nitric Acid
7719-12-2	Phosphorus Trichloride
7726-95-6	Bromine
7782-41-4	Fluorine
7783-06-4	Hydrogen sulfide
7783-07-5	Hydrogen selenide
7787-71-5	Bromine trifluoride
7789-30-2	Bromine pentafluoride
7803-51-2	Phosphine
8008-20-6 and 70892-10-3	Jet Fuels (JP-5 and JP-8)
8014-95-7	Oleum
10025-67-9	Disulfur dichloride
10025-87-3	Phosphorus oxychloride
10034-85-2	Hydrogen Iodide
10035-10-6	Hydrogen Bromide
10102-43-9	Nitric oxide
10102-44-0	Nitrogen dioxide
13463-39-3	Nickel carbonyl
13463-40-6	Iron pentacarbonyl
13637-63-3	Chlorine pentafluoride

Proposed AEGL Chemicals: 64

No CAS No. available	Magnesium aluminum phosphide
51-75-2	Nitrogen Mustard-2
74-89-5	Methyl amine
75-04-7	Ethyl amine
75-50-3	Trimethyl amine
75-54-7	Methyl dichlorosilane
78-85-3	Methacrylaldehyde
79-22-1	Methyl chloroformate
79-38-9	Trifluorochloroethylene
92-52-4	Biphenyl
95-63-6	1,2,4-Trimethylbenzene
98-94-4	Methyl vinyl ketone
106-93-4	Dibromoethane
107-13-1	Acrylonitrile
107-19-7	Propargl alcohol
108-05-4	Vinyl acetate
108-23-6	Isopropyl chloroformate
108-67-8	1,3,5-Trimethylbenzene (Mesitylene)
108-90-7	Chlorobenzene
108-98-5	Phenyl mercaptan
109-61-5	Propyl chloroformate
116-14-3	Tetrafluoroethylene
116-15-4	Hexafluoropropylene
124-40-3	Dimethylamine
463-51-4	Ketene
501-53-1	Benzyl chloroformate
526-73-8	1,2,3-Trimethylbenzene
538-07-8	Nitrogen Mustard-1
541-41-3	Ethyl chloroformate
542-88-1	Bis (chloromethyl) ether
543-27-1	Isobutyl chloroformate
555-77-1	Nitrogen Mustard-3
578-94-9	Adamsite
592-34-7	n-Butyl chloroformate
593-89-5	Methyldichloroarsine
598-14-1	Ethyldichloroarsine
674-82-8	Diketene
681-84-5	Tetramethoxy silane
684-16-2	Hexafluoroacetone
696-28-6	Phenyl dichloroarsine
712-48-1	Diphenyldichloroarsine
993-00-0	Methyl chlorosilane
1305-99-3	Calcium phosphide
1314-84-7	Zinc Phosphide
1327-53-3	Arsenic trioxide
1634-04-4	Methyl-tertiary-butyl ether (MTBE)
1885-14-9	Phenyl chloroformate
2487-90-3	Trimethoxysilane
2937-50-0	Allyl chloroformate
2941-64-2	Ethylchlorothioformate
3173-53-3	Cyclohexyl isocyanate
7439-97-6	Mercury Vapor
7719-09-7	Thionyl chloride
7783-41-7	Oxygen difluoride
7783-79-1	Selenium hexafluoride
7791-25-5	Sulfuryl chloride
7803-62-5	Silane
12504-13-1	Strontium Phosphide
12057-74-8	Magnesium Phosphide
12058-85-4	Sodium Phosphide
13863-41-7	Bromine chloride
17462-58-7	sec-Butyl chloroformate
20770-41-6	Potassium Phosphide
20859-73-8	Aluminum phosphide
24468-13-1	2-Ethylhexylchloroformate

Holding AEGL Chemicals:13

75-36-5	**Acetyl Chloride**
76-02-8	**Trichloroacetyl Chloride**
80-63-7	**Methyl 2-chloroacrylate**
97-02-9	**2,4-Dinitroaniline**
503-38-8	**Diphosgene**
506-77-4	**Cyanogen chloride**
556-64-9	**Methyl thiocyanate**
814-68-6	**Acrylyl chloride**
7783-60-0	**Sulfur tetrafluoride**
7784-34-1	**Arsenic trichloride**
7803-49-08	**Hydroxylamine**
10294-34-5	**Boron Trichloride**
10545-99-0	**Sulfur dichloride**