



# Acute Exposure Guideline Levels

Chemical Stockpile Emergency Preparedness Program

## Frequently Asked Questions (FAQs) Regarding Acute Exposure Guideline Levels (AEGLs) at CSEPP Sites

Various questions have been asked about AEGLs, the new toxicity values that are being used in current CSEPP planning. These include a variety of topics of varying levels of detail and complexity. The CSEPP-PAO IPT provides this document as reference tool for CSEPP personnel. This document itself not intended as a 'fact sheet' to be provided directly to the public (as opposed to those cited below) but may be used to provide responses to public queries or internal queries. The questions addressed in this document are 'grouped' in the following four categories and questions in each category are ordered from the more simple to the more complex. Additional details are available in referenced Fact Sheets.

**I. General AEGL  
information**

**II. Impacts  
& Changes**

**III. Health  
Effects**

**IV. Actions  
to Take**

Fact Sheets for additional information on AEGLs are available with varying degrees of information and details for different audiences. These are presented as:

Tier I is very general information, designed for general public.

Tier I Fact Sheet:

***Ready-Set-Act AEGLs and CSEPP, Jan 03***

Tier II is more detailed and may be used by decisions makers as well as to provide answers to citizens who have additional questions.

Tier II Fact Sheets:

***Basic Questions Regarding AEGLs and Emergency Planning And Response, Jan 03***

***Basic Fact Regarding Chemical Exposure Standards and Guidelines, Jan 03***

Tier III provides detailed, somewhat technical descriptions of health effects information associated with chemical warfare agents and AEGLs. It may be useful to planners, responders, and those who have specific questions on the range and types of health effects associated with the AEGLs.

Tier III Fact Sheets

***Health Effects Associated with Sulfur Mustard AEGLS , Jan 03***

***Health Effects Associated with Nerve Agent AEGLS, Jan 03***

## I. General AEGL information

### ***I-1. What are AEGLs? Is it just an Army deal? Are they just for chemical warfare agents?***

Acute Exposure Guideline Levels are new, common standards that will help protect the public during chemical emergencies. AEGLs are developed for hundreds of hazardous chemicals that are around us every day, including the chemical warfare agents that are stored at the nearby Army depot. The U.S. Environmental Protection Agency (EPA) and scientists from the chemical industry, academia and government develop AEGLs.

The guidelines include three health effect levels and multiple time durations on which to base instructions for protecting the public in the event of an emergency. They are used in computer modeling to identify different areas or zones of concern if a release of a chemical was to occur from a facility.

### ***I-2. What are the three AEGL levels?***

The three levels consider the potential health effects from a short-term, one-time exposure to chemicals in the air. They represent a range of health effects from no symptoms to potential life-threatening effects that could occur if no protection, medical treatment, or decontamination is provided. General definitions describe (see below) are used to describe the three levels of severity, though specific health effects will be different for every chemical:

- AEGL 1 -- People who are exposed to an amount greater than AEGL 1, may experience symptoms that range from no symptoms to mild discomfort.
- AEGL 2 -- People who are exposed to an amount greater than AEGL 2 may have an increasing severity of symptoms, up to some level of impairment. With chemical agents this impairment would be due to temporary eye effects that may make driving difficult in dark or low-light conditions.
- AEGL 3 - Without medical treatment, exposure to an amount greater than AEGL 3, could become life threatening or result in death.

### ***I-3. Why are there different AEGLs for different time periods?***

One very important scientific improvement provided by AEGLs is that they address the importance of *dosage over time*. Basically a single concentration can pose a variety of effects depending how much time occurs.

#### ANALOGY:

A 21 year old, 100 lb, female drinks 6 beers in less than 2 hours VS

A 21-year-old, 100 lb, female drinks 6 beers in 6-8 hours

The effects will be much different even though this person took in the same amount of beer (concentration/dosage), it was consumed in a much longer period of time (duration/time).

## II. Impacts and Changes from Previous Plans

### ***II-1. Why change to AEGLs? Who made the decisions to change? Were/are we less safe? Are our previous or existing plans okay?***

Our plans have always been safe and based on the best science and technology available. As technology and scientific evidence improves and is enhanced, our plans have continuously evolved to incorporate the new information. In this case, AEGLs have recently been developed using new models that incorporate an extra margin of safety. Our plans have always included safety measures, so the incorporation of AEGLs essentially makes safe even safer. The Army and the Federal Emergency Management Agency agreed in a joint policy (CSEPP Policy 20) to use these new national guidelines.

### ***II-2. How does this affect me/my family/children at school? Am I supposed to do something differently?***

The basic CSEPP process has not changed. Our plans have always included safety measures, so the incorporation of AEGLs essentially makes safe even safer. As always, you and your family members should comply with the provided local warning system and associated the emergency procedures and instructions. Because instructions as to what actions should be taken will depend on your location, the weather conditions, and other factors that local emergency planners take into consideration, pay attention to the local alert system and instructions. **See Tier 1 Ready-Set-Act AEGL Fact Sheet for more information.**

### ***II-3. What is the transition date to AEGLs?***

There are phases to the change. In the ongoing initial phase, Innovative Emergency Management (IEM), a private contractor, is visiting each site to input new information into their computers, and make recommendations based on the results of a site-specific analyses modeling. All sites will have this completed by or before June 2003, after which the follow on phase, involving state, Army, and Federal Emergency Management Agency agreement of site-specific plans will occur by September 2003.

### ***II-4. Is it possible that the emergency planning zones can change? How will AEGLs affect Protective Actions? Will this change the burn/destruction schedule?***

Current plans are still in effect. However, pending the outcome of the IEM technical analyses and state permitting requirements, there is a possibility for change. There are many variables including: meteorological conditions, terrain, chemical agents stored, munition type, etc. When completed, the assessments being conducted by IEM will help answer these questions. Ultimately, these will be site-specific decisions. You will be provided clear instructions if the protective actions are changed.

### ***II-5. How do previous levels (no effects and 1% lethality) compare to AEGLs?***

The two primary existing toxicity criteria do not directly match up with one of the three AEGL levels. However on a broad level, the no effects (which are actually called "no significant effects") are similar in concept to the AEGL 2, while AEGL 3 is more protective than 1% lethality.

### III. Health Effects and Toxicity Information

#### ***III- 1. What does toxicity mean? Will exposure to these chemicals kill me or just make me sick?***

Toxicity is a term that refers to the range of adverse health effects that is caused by a chemical. As with any chemical, chemical warfare agents can cause minor temporary effects at low levels, as well as more severe effects, including death, at higher levels. The level or concentration associated with different health effects is unique to every chemical. See Tier II Fact Sheet on Basic Facts Regarding Chemical Exposure Standards and Guidelines Tier III Fact Sheets on Specific Health Effects Associated with AEGLs for more information.

***III-2. Can you be more specific about the symptoms?*** Specific health effects depend on the type of chemical and level of exposure. Nerve agent will produce effect immediately, while health effects from sulfur mustard won't develop until hours after a person was exposed. See Tier III Fact Sheets on Specific Health Effects Associated with AEGLs for more information.

#### ***III-3. How precise is your health-effects info? How is information calculated and how do you know that the numbers are safe for everybody?***

The experts who developed the AEGLs considered factors such as differences in age, health, sex, and genetics among the population. These factors had not been considered previously. Because scientific data always has some uncertainty, a margin of safety has been built in to the AEGLs to ensure they protect the susceptible/sensitive members of the general population. This thoroughness means AEGLs will help emergency responders provide safety for all.

#### ***III-4. Is VX 10x more deadly? Does it take 10x less VX to show health effects?***

Our knowledge of the health effects associated with VX has not changed. However, the levels at which effects may begin to occur has been lowered to reflect new toxicity models, which incorporate an extra margin of safety. This is especially true for VX, which we have very little toxicity data on (compared to the other agents) so there is a larger margin of safety.

#### ***III-5. I read the definition of AEGL 2 and it says that above this level there are permanent or disabling effects. What kinds of permanent/disabling effects are caused? What about the cancer risk of Mustard?***

The AEGL definitions are very generic in order to reflect a broad range of chemicals and types of effects.

In the case of nerve agents, the AEGL 2 does not represent any permanent effects. AEGL 2 represents what is considered to cause a temporary effect that could impair one's ability to evacuate if driving in the dark. This effect is called miosis, which will go away without treatment shortly after the exposure is over. By AEGL 3 the primary concern is the potential threat to life.

Mustard has been known to cause cancer, however, evidence shows that this only occurs after relatively high exposures. At AEGL 2, the key effect from mustard is eye irritation and runny nose. The potential risk of cancer at these levels was determined to be negligible based on an evaluation using US Environmental Protection Agency protocols. Above AEGL 3, the cancer risk increases, but a variety of other effects to include severe eye effects, breathing difficulties, and possibly blisters of the skin would be of greater immediate consideration.

**III-6. What is miosis?**

Miosis is a condition where the nerves in the eye cause the pupils to shrink. There are varying degrees of miosis. More serious cases caused by higher concentrations of nerve agent. At very mild levels it may go unnoticed. More significant 'shrinking' of the pupil may become noticeable as 'pin-point' pupils and vision may be impaired in low-light situations.

**III-7. What is "short term" vs. "temporary?"**

"Short term" and "temporary" mean an effect is reversible and non-permanent without any medical treatment. The health effects associated with AEGL 1 and AEGL 2 exposures are referred to as "temporary" or "short term," which means they may last from one hour to two days, depending on the agent in question and actual dose received.

**III-8 Does AEGL 1 mean there will be no effects?**

It is possible that no one would experience any effects at AEGL 1 or even slightly above the AEGL 1 for both nerve agents and mustard. However, because there are always some unknowns, AEGL 1 are described as agent levels that could result in some minor, temporary discomfort (eye effects) in a very small portion of the general population. It is difficult to say who would be most susceptible because it is usually due to genetic factors.

**III-9. What is a sensitive person? What is a hypersensitive person?**

**Are there other sub-population groups? Will my children be safe?**

Children, the elderly and asthmatics are considered 'sensitive' or 'susceptible' sub-populations. Use of AEGLs protects these sub-populations.

An extremely small portion of the general public may be referred to as "hyper- susceptible" or "hypersensitive." These are people who have serious underlying health conditions, weak immune systems, or extreme sensitivities to chemicals. AEGLs are not specifically designed to address these very unique cases.

## IV. Actions to Take

### ***IV-1. What am I supposed to do?***

As always, you and your family members should comply with the provided local warning system and associated the emergency procedures and instructions. Because instructions as to what actions should be taken will depend on your location, the weather conditions, and other factors that local emergency planners take into consideration, pay attention to the local alert system and instructions. You may be instructed to do one of the following: shelter in place, evacuate, or just remain calm and stay tuned to your local alert system for additional instructions. **See Tier 1 Ready-Set-Act AEGL Fact Sheet for more information.**

### ***IV-2. Shouldn't I just evacuate? Is sheltering in place safe?***

While sometimes evacuation may seem like a reasonable thing to do, there may be specific reasons that doing so may put you/family at greater risk. This could include exposing yourself to levels of chemical that are unsafe, in which case shelter in place would provide more protection. If time and conditions allow for evacuation, this may be the preferred action. These are complicated decisions that your emergency planners make by considering in a variety of factors in order to minimize overall risk. Therefore it is important that you and your family members comply with the local warning system and associated the emergency procedures and instructions

### ***IV-3. What kinds of signs should I look for? When should I seek medical treatment?***

In general, watch for signs such as difficulty seeing, eye irritation, trouble breathing, or nausea. Non-severe effects will go away within hours on their own without medical treatment, but if you feel you have any of these effects or other injuries seek a medical evaluation.