

**From:** Giacinto, Joseph  
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**Subject:** NOAA - Acute Exposure Guideline Levels (AEGLs)  
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## Acute Exposure Guideline Levels (AEGLs)

Public Exposure Guidelines	AEGLs	ERPGs	TEELs	PACs
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AEGLs are [exposure guidelines](#) designed to help responders deal with emergencies involving chemical spills or other catastrophic events where members of the general public are exposed to a hazardous airborne chemical. (Acute exposures are single, non-repetitive exposures that don't exceed 8 hours.)

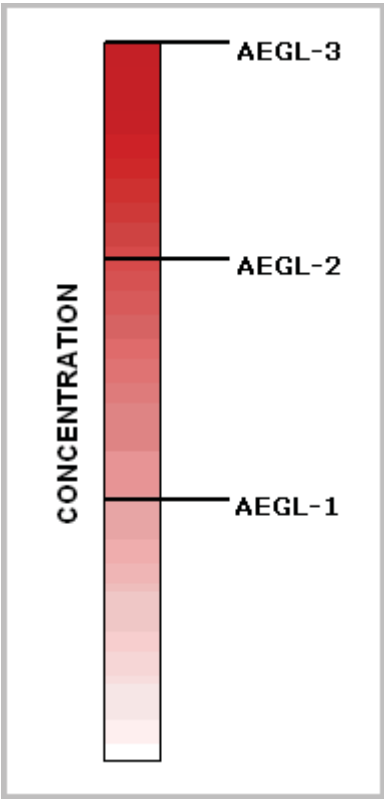
This page discusses the following topics:

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- [How are AEGLs chosen?](#)
- [What substances have AEGLs?](#)
- [How should AEGLs be used?](#)
- [How does ALOHA use AEGLs?](#)

### What are AEGLs?

AEGLs estimate the concentrations at which most people—including sensitive individuals such as old, sick, or very young people—will begin to experience health effects if they are exposed to a hazardous chemical for a specific length of time (duration). For a given exposure duration, a chemical may have up to three AEGL values, each of which corresponds to a specific tier of health effects. The three AEGL tiers are defined as follows:

- **AEGL-3** is the airborne concentration, expressed as parts per million (ppm) or milligrams per cubic meter (mg/m<sup>3</sup>), of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.



- **AEGL-2** is the airborne concentration (expressed as ppm or mg/m<sup>3</sup>) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
- **AEGL-1** is the airborne concentration (expressed as ppm or mg/m<sup>3</sup>) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.


All three tiers (AEGL-1, AEGL-2, and AEGL-3) are developed for five exposure periods: 10 minutes, 30 minutes, 60 minutes, 4 hours, and 8 hours. The table below shows how the chlorine AEGL values vary with exposure duration.

Final AEGLs for chlorine (in parts per million)					
	10 minutes	30 minutes	60 minutes	4 hours	8 hours
AEGL-1	0.50	0.50	0.50	0.50	0.50
AEGL-2	2.8	2.8	2.0	1.0	0.71
AEGL-3	50	28	20	10	7.1

Typically, the AEGL values will be different for each exposure duration (such as the AEGL-3 values in the table above). This is because the physical effects are typically related to dose (that is, concentration over exposure duration). However, in some cases, the AEGL values will be the same for all durations. This situation usually occurs at the AEGL-1 level (as in the table above), because it is

a threshold for non-disabling effects; some effects (for example, whether people will be able to smell the chemical) depend only on concentration—not on the length of time people are exposed.

## How are AEGLs chosen?

The AEGL development process changed in November 2011; a brief summary of the process—present and historical—is included below. To find out more specific details, go to the [AEGL Program website](#) .


*New AEGL Process (November 2011 to Present)* In November 2011, the National Advisory Committee for AEGLs was eliminated and the AEGL development process was modified. Future development work on the AEGLs will focus on finalizing interim AEGLs through the National Academy of Sciences.

*Old AEGL Process (1996 to October 2011)* In the past, AEGLs were developed by the National Advisory Committee for AEGLs. The committee established detailed guidelines for developing uniform, meaningful emergency response standards for the general public.

Each AEGL was developed independently by a team of scientists who assigned priority to current data from human and animal studies. The process was exhaustive and the guidelines were thoroughly reviewed. As a result, AEGLs represent the best public exposure guidelines available to date.

As part of the development process, interim AEGL values were established—following review and consideration of public comments—by the National Advisory Committee for AEGLs. Interim AEGLs are available for use by organizations while awaiting peer review and publication of final AEGLs by the National Research Council of the National Academy of Sciences.


## What substances have AEGLs?

As of mid-2016, about 175 substances have final AEGLs and about 80 substances have interim AEGLs. To see the current list of substances with AEGLs, go to the [AEGL Program website](#) . You can also search for a specific substance on the [CAMEO Chemicals site](#) to find response recommendations and chemical data (including AEGLs).

## How should AEGLs be used?

AEGLs should be used to help protect the public when there has been a chemical release that is short-term in duration. AEGLs estimate how the general public would react to a release of this nature, so they can be used to identify areas where a hazard exists if the concentration of hazardous gas is exceeded for the specified exposure duration. For example, in areas with concentrations just above the AEGL-1, most people would experience temporary, non-disabling effects. On the other hand, in areas with concentrations just above the AEGL-2, most people would experience significant—but not life-threatening—health effects.

**Note:** Each defined chemical has AEGL values for five exposure durations, and you should use the duration that is appropriate for your release. AEGLs shouldn't be used as:

- Guidelines for workers who are routinely exposed to chemicals for longer durations. In such cases, you should use [workplace exposure limits](#), because they contain safety factors specific to that type of exposure.
- Guidelines for members of the public who are exposed to background chemical releases for longer durations. In these types of air quality issues, values such as the [National Ambient Air Quality Standards \(NAAQS\)](#)  should be used rather than emergency response guidelines.

**How does ALOHA use AEGLs?**

In [ALOHA](#), you can choose AEGLs as your [toxic Levels of Concern \(LOCs\)](#) when modeling a toxic chemical release—if AEGLs have been defined for that chemical. ALOHA allows you to specify up to three toxic LOCs. So, you can choose the AEGL-1, AEGL-2, and AEGL-3 values to generate a threat zone estimate where yellow, orange, and red zones indicate areas where those values were predicted to be exceeded at some point after the chemical release began. (To determine how long the LOC was exceeded at a particular location, read the [Ask Dr. ALOHA article on working with the concentration graph](#).)

If final or interim AEGLs are available for the chemical you are modeling, ALOHA will provide the AEGL values with a 60-minute exposure duration as the default toxic LOCs. Even though AEGLs are available for five exposure durations, only the 60-min AEGLs are provided in ALOHA (because it models the release for 60 minutes from your start time).

**Note:** If your release has a short duration and ALOHA's concentration graphs show that the predicted exposure durations are short at all points in the threat zone, you may want to use the 10-min or 30-min AEGL values instead of the 60-min AEGLs included in ALOHA. Read the [Ask Dr. ALOHA article on choosing toxic LOCs](#) (to learn how to enter your own LOCs) and the article on working with the concentration graph (to learn how to use this graph to consider exposure durations). You can look up the AEGL values for all durations on the [CAMEO Chemicals site](#).

Last updated Wednesday, April 17, 2019 9:52pm PDT

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