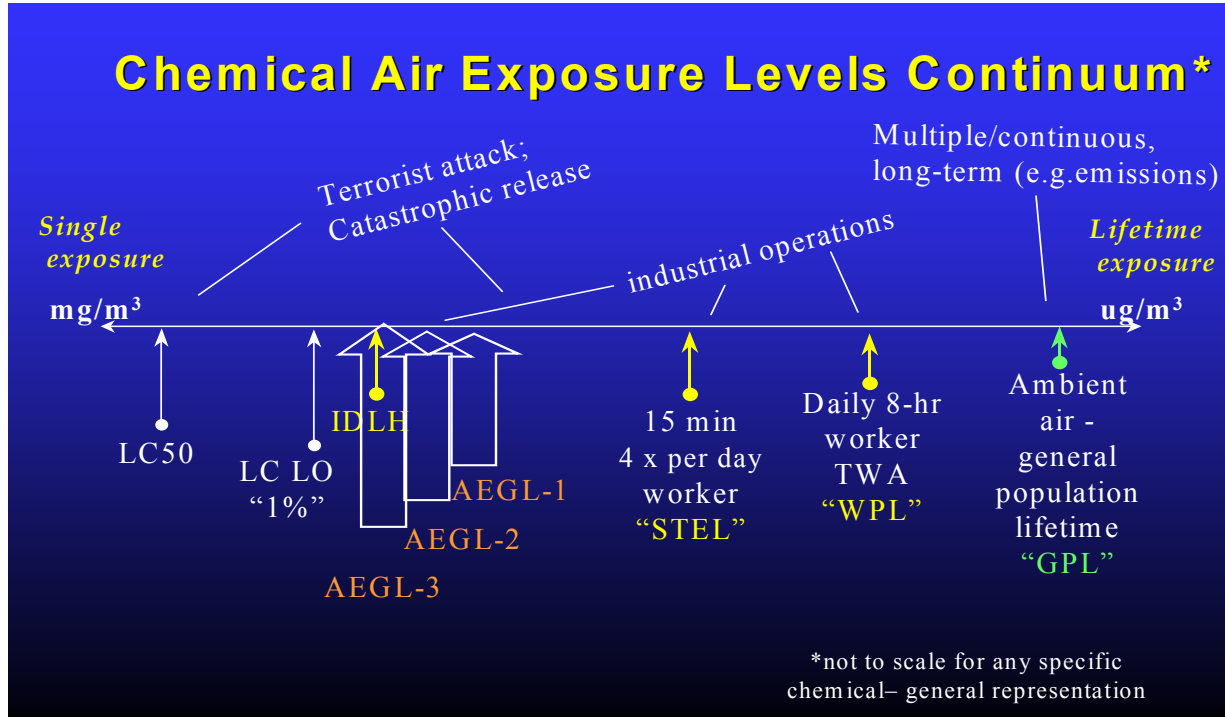


Basic Facts Regarding Chemical Exposure Standards and Guidelines

Chemicals do not have a single 'safe level.' Every chemical has multiple health-based concentration standards, limits, and guidelines – the concentrations will vary depending on the duration and frequency which people may be exposed, as well as the level of risk acceptance, which will depend on the situation. In addition – different standards and guidelines are designed for air, water, soil, and even other sources such as food.

Health organizations (such as the US EPA, CDC, OSHA/NIOSH, FDA, as well as military health organizations) develop specific exposure concentration levels for a variety of applications. When assessing or preventing health risks associated with chemicals, it is important that the most appropriate health-based chemical standards/guidelines are used for comparison. The Figure shows a generic example of the range of concentration levels represented by various criteria.



ACRONYMS and ABBREVIATIONS:

US EPA	United States Environmental Protection Agency
CDC	Center for Disease Control and Prevention
OSHA	Occupational Safety and Health Agency
NIOSH	National Institute for Occupational Safety and Health
FDA	Food and Drug Administration
WHO	World Health Organization
mg/m ³	milligram chemical per cubic meter of air [~ one part per million (ppm) x molecular weight /24.45 = 1/1,000,000]
ug/m ³	microgram chemical per cubic meter of air [~ one part per billion (ppb) x molecular weight /24.45] = 1/1,000,000,000
LC50	lethal concentration-50% = concentration at which one-half (50 out of 100) of an exposed group would be expected to die
LC01	lethal concentration-1% = concentration at which 1% (1 out of 100) of an exposed group would be expected to die
IDLH	Immediately Dangerous to Life and Health (30 minute occupational standard used as criteria to determine full protective gear)
AEGL-1	Acute Exposure Guidelines Level -1 – for emergencies; initial level of discomfort (minor transient effects)
AEGL-2	Acute Exposure Guidelines Level -2 – for emergencies; level above which effects may begin to impair normal activities
AEGL-3	Acute Exposure Guidelines Level -3 – for emergencies; level above which effects may begin to be very severe/result in death
STEL	Short-Term Exposure Limit – used in occupational settings to monitor/maintain safe conditions
WPL	Worker Population Limit – a term used for chemical warfare agents; represents a standards similar to a TLV (see below)
GPL	General Population Limit - a term used for chemical warfare agents; represents criteria similar to adjusted RfC (see below)
TLV	Threshold Limit Value – an 8-hr time weighted average used in occupational settings to ensure continuous safe conditions
RfC	Reference concentration – the concentration that could be breathed in continuously every day for a lifetime

For additional information contact USACHPPM at 410-410-5213/6096

The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) is a support agency for the U.S. Army Surgeon General. Its mission is to provide worldwide technical support for preventive medicine, public health, and health promotion/wellness services into all aspects of America's Army and Army Community while anticipating and responding to operational needs and adapting to a changing world environment.