

Acute Exposure Guideline Levels AEGs

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Mandate

- Clean Air Act mandates EPA regulations
 - Prevent accidental releases
 - Reduce severity of releases
 - 1990 amendments: section 112(r)
- Risk Management Plan
 - Determine the maximum distance that would result in the exposure to the toxic endpoint (Level of Concern – LOC)
 - 1 hour ERPG-2 values are the default

Since 1996 the EPA has convened meetings of a National Advisory Committee for Acute Exposure Guideline Levels (AEGGLs)

Sponsored by the Committee of Toxicology of the National Research Council and National Academy of Sciences

Application: “Once in a lifetime short term exposures” for the general public

AEGL Health Outcomes

- AEGL-1 Notable discomfort,
 irritation
- AEGL-2 Irreversible or serious, long
 lasting effects, impaired ability to escape
- AEGL-3 Death or life threatening
- Same as ERPG health endpoints

AEGL Time Periods

- Levels are set for 5 time periods
- 10 and 30 minutes, 1, 4 and 8 hours for each health outcome
- Total of 15 levels per chemical
- ERPGs are only set for 1 hour

AEGL Application

- General population including infants, children, asthmatics and other susceptible groups
- Unlike occupational recommendations, intended for once in a lifetime exposure

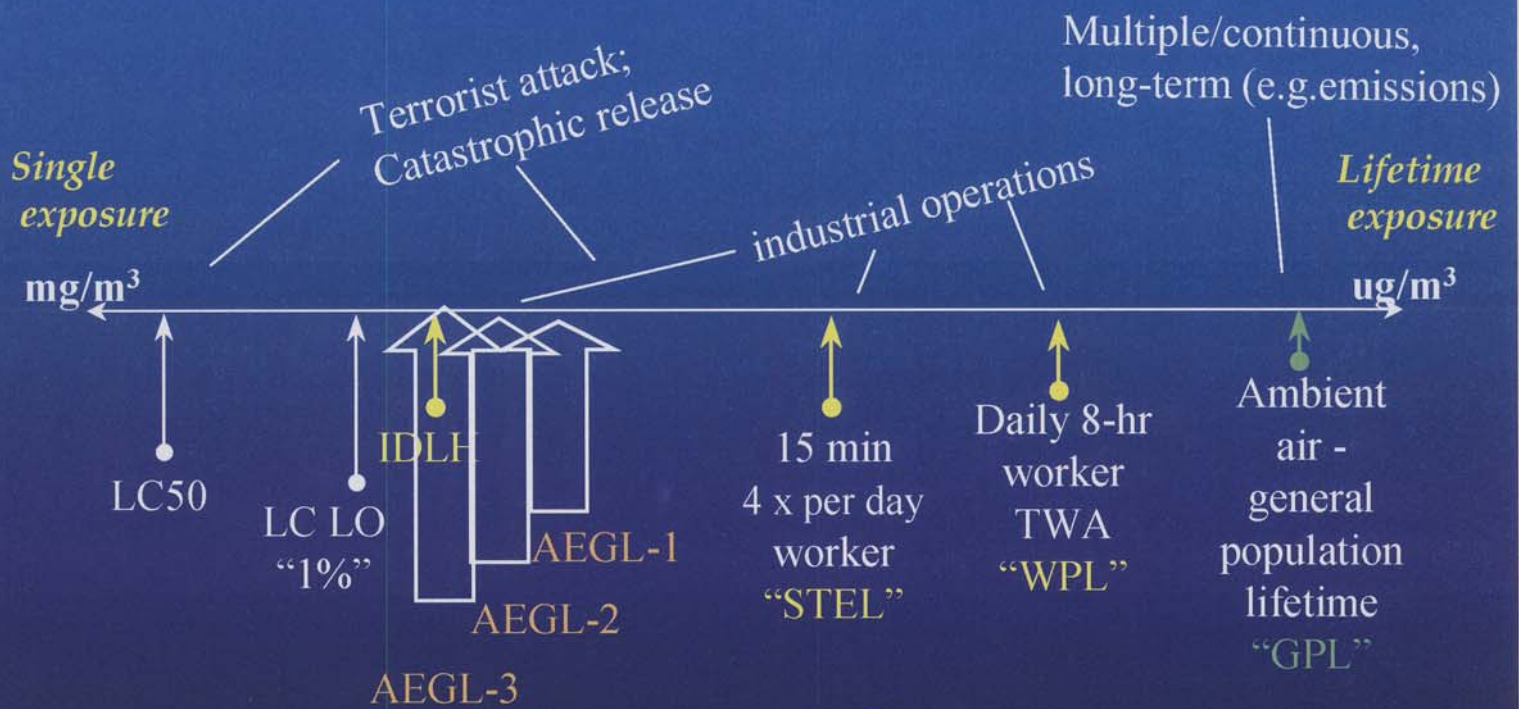
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CBRN Standards Development

NIOSH presentation for APR Escape Respirator

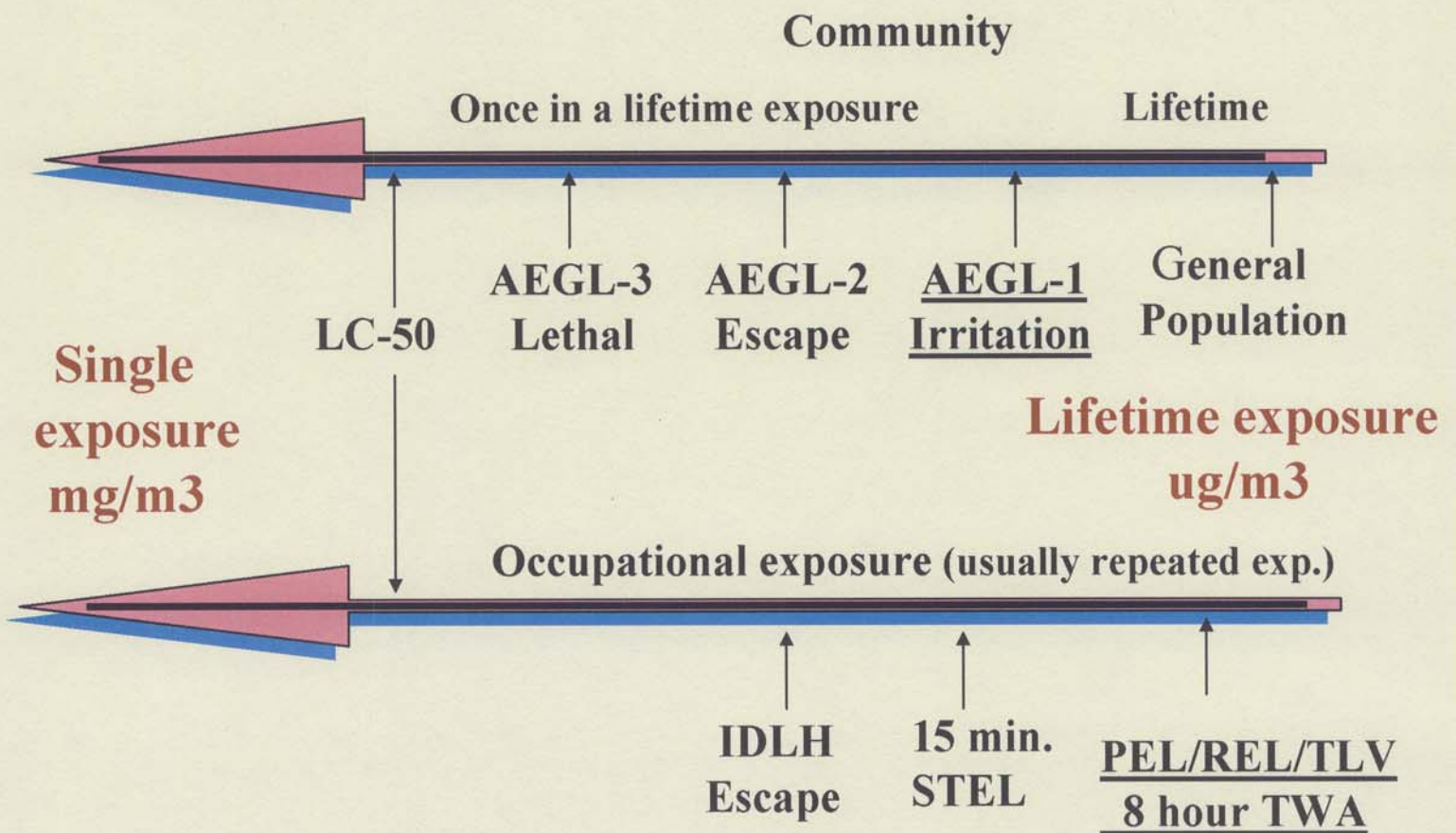


Chemical Air Exposure Levels Continuum*



*not to scale for any specific chemical— general representation

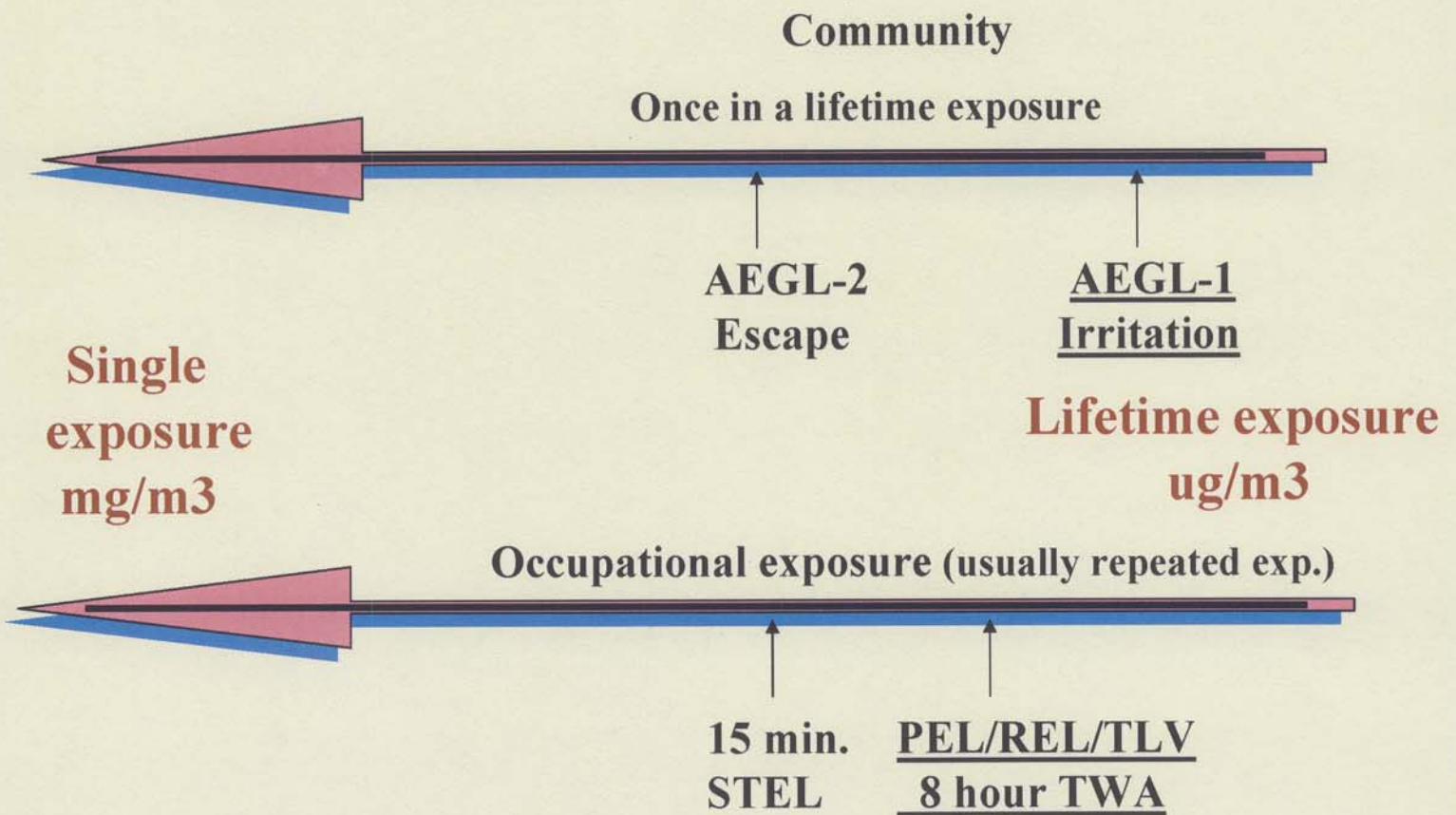
Relationship of AEGLs to other values



AEGLs compared to Occupational values

- AEGLs may be higher since they are intended for a single once in a lifetime exposure
- AEGLs may be lower for general population
- AEGL data is overwhelmingly single dose

Relationship of AEGLs to other values



Application of AEGL values in the NIOSH CBRN respirator process

- AEGLs are different from most other recommended values
 - AEGLs and ERPGs are designed for a single once in a lifetime exposure to the general public
- Clear statements on limitations of AEGL and ERPG values must be included when they are used

Application of AEGL values

- AEGL-2 values are the threshold for the inability to escape or irreversible injury
 - Clear statements on potential health effects
 - What are the implications for setting inside the respirator values in the range of AEGL-2 values?
 - Notification of CBRN respirator users of potential health effects
- Close examination of data and rationale for determining AEGL-2 values

Caveats

Primary Controls, even for emergencies, is NOT reliance on “safe” recommended levels

- Control Exposures; hierarchy of controls
- Substitution
- Pollution Prevention (minimization of storage volume)

Need multi disciplinary efforts in Risk Assessment

Toxicologists, Physicians, Epidemiologists,
Industrial Hygienists, Statisticians, Engineers

Further Caveats

- “Intended to be used as planning tools”
- “when an actual chemical emergency occurs, there often is no time to measure airborne concentrations”
- “Not to be used as safe limits for routine operations or definitive delineators between safe and unsafe exposure conditions”

(all from AIHA, ERPG handbook, 2000)