EMERGENCY RESPONSE PLANNING GUIDELINE (ERPG)
Public Comment Draft

1-HEXENE
(2026)

ERPG-3: 5,000 ppm (17,000 mg/m^3)
ERPG-2: 500 ppm (1,700 mg/m^3)
NEW ERPG-1: 2 ppm (7 mg/m^3)

ERPG™ Maximum Airborne Concentration Levels

ERPG 1
MILD

The maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor.

ERPG 2
SERIOUS

The maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take action.

ERPG 3
SEVERE

The maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects.

AIHA® | GUIDELINE FOUNDATION

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I. Recommended ERPGs and Supporting Rationales

ERPG-3: 5,000 ppm (17,000 mg/m^3)

5,000 ppm of 1-hexene is the maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects. This value is below the highest non-lethal exposure concentration of 27,600 ppm and the derived $BMDL_{05}$ value of 21,300 ppm from a 4-hour acute inhalation toxicity study in rats. This value is also 42% of the lower explosive limit.

ERPG-2: 500 ppm (1,700 mg/m^3)

500 ppm of 1-hexene is the maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious adverse health effects or symptoms that could impair an individual's ability to take protective action. The onset of mild CNS depression in workers is 1,000 ppm. No compound-related clinical signs were reported in a 13-week inhalation study in rats at concentrations up to and including 3000 ppm. While 500 ppm may be conservative, this level is expected to allow the more sensitive individuals of the general population to safely escape exposure.

ERPG-1: 2 ppm (7 mg/m³)

2 ppm of 1-hexene is the maximum airborne concentration below which nearly all individuals could be exposed for up to one hour without experiencing or developing effects other than mild transient health effects or without perceiving a clearly defined objectionable odor. This value is based on a reported odor threshold concentration of 0.139 ppm. Using the methodology of Ruijten et al, a "Level of distinct Odor Awareness (LOA)" was estimated to be 2 ppm. Based on this method, an ERPG-1 value was established at 2 ppm. (Ruijten et al., 2009)

II. History of 1-Hexene ERPGs

First Published in 2008: ERPG-1=NA, ERPG-2=500 ppm, ERPG-3=5000 ppm

Updated and republished in 2026: ERPG-1=2 ppm, ERPG-2=500 ppm, ERPG 3=5000 ppm

The literature search used to develop the current document was conducted in April 2026.

III. References

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