

The Emergency Response Planning (ERP) Committee is proposing the following values for maleic anhydride and is inviting interested individuals and the public to provide comments. Comments should be sent via e-mail to Dr. Richard Thomas, Chair of the ERP Committee at rthomas@intercet.com.

MALEIC ANHYDRIDE

ERPG-3: 20 ppm (80.2 mg/m³)

ERPG-2: 2 ppm (8.0 mg/m³)

ERPG-1: 0.2 ppm (0.8 mg/m³)

Recommended ERPGs and Supporting Rationales

A. ERPG-3: 20 ppm (80.2 mg/m³)

It is believed that nearly all individuals could be exposed to 20 ppm for up to one hour without experiencing or developing life-threatening health effects. Indeed, animal studies indicate that Sprague Dawley rats received a single 6-hour exposure to maleic anhydride vapor at an average concentration of 165 mg/m³ (41.1 ppm) without any deaths occurring.^(MON84a) A concentration of 30 ppm for 5 minutes was intolerable to some healthy male test subjects, but did not result in fatalities or long-term adverse effects.^(HIN60) Although there is some evidence for maleic anhydride to be a sensitizer,^(GER66) the allergic reactions experienced are not life-threatening.

B. ERPG-2: 2 ppm (8.0 mg/m³)

It is believed that 2 ppm 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 health effects or symptoms which could impair an individual's ability to take protective action. Most studies have used nominal concentrations; while there might be a complication due to hydrolysis forming maleic acid, this would be similar to the real world in an emergency release. The ERPG-2 value is based upon reported levels greater than 2.5 ppm (10.03 mg/m³) as irritating,^(GER66) but, responses at 2.5 ppm and even 5 ppm were few and recorded as "slight". Male humans exposed at 5 ppm for four hours exhibited no irreversible or serious health effects.^(HIN60) Concentrations of 20 ppm were distinctly unpleasant, but not harmful.^(HIN84) Repeated exposures greater than 1.25 ppm (5.02 mg/m³) produced asthmatic responses in workers so that even lower concentrations could no longer be tolerated,^(PAT76) however, such responses were not found due to short-term exposures.^(HIN60) Rats, hamsters, and monkeys exposed at 2.44 ppm for

six hours per day, five days per week, for six months had no mortality, and showed no irreversible or other serious health effects.^(SHO86)

C. ERPG-1: 0.2 ppm (0.8 mg/m³)

It is believed that 0.2 ppm 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 of without perceiving a clearly defined objectionable odor. Eye irritation has been reported around 0.25 ppm (1.0 mg/m³).^(ACGIH86) At 0.5 ppm (2.0 mg/m³) there is a faint odor without irritation.^(ACGIH86) No respiratory tract or eye irritation was reported at 0.22 ppm (0.88 mg/m³).^(GRI64) This level may not be protective of a sensitized individual.