

methylphosphonofluoridate, CAS 107-44-8); and VX (O-ethyl-S-(2-diisopropylaminoethyl)-methylphosphonothiolate, CAS 50782-69-9). CDC based its recommendations on comments by scientific experts at a public meeting convened by CDC on August 23-24, 2000, in Atlanta, Georgia; the latest available technical reviews; and the risk assessment approach frequently used by regulatory agencies and other organizations. Additionally, CDC reviewed the substantial background information provided in the recent U.S. Army evaluations of the airborne exposure criteria for chemical warfare agents. AELs for chemical warfare agents GA, GB, and VX were reevaluated by using the conventional reference concentration risk assessment methodology for developing AELs described by the U.S. Environmental Protection Agency. This methodology is considered conservative; however, the calculated exposure limits are neither numerically precise values that differentiate between nonharmful and dangerous conditions, nor are they precise thresholds of potential human toxicity. The recommended changes to the AELs do not reflect change in, nor

a refined understanding of, demonstrated human toxicity of these substances but rather the changes resulted from updated and minimally modified risk assessment assumptions. Overt adverse health effects have not been noted in association with the previously recommended exposure limits. This may be due to rigorous exposure prevention efforts in recent years as well as the conservative implementation of the existing limits (*i.e.*, 8-hour time-weighted average exposure limits have been implemented as short-duration ceiling values).

Recommended AELs for GB: CDC recommends a WPL value of 3×10^{-5} mg/m³, expressed as an 8-hour time-weighted average (TWA). Additionally, CDC recommends a STEL of 1×10^{-4} mg/m³ to be used in conjunction with the WPL. Exposures at the STEL should not be longer than 15 minutes and should not occur more than four times per day, and at least 60 minutes should elapse between successive exposures in this range. The STEL should not be exceeded during the work day, even if the cumulative exposure over the 8-hour TWA is not exceeded. CDC recommends a decrease in the GPL to 1×10^{-6} mg/

m³. The WPLs and GPLs values are approximately threefold lower than levels previously recommended by CDC in 1988. An immediately-dangerous-to-life-or-health (IDLH) value of 0.1 mg/m³ is recommended for GB.

Recommended AELs for GA: Although not as well-studied as GB, GA is believed to be approximately equal in potency to GB. Therefore, CDC recommends the same exposure limits for GA as for GB.

Recommended AELs for VX: CDC recommends that the VX WPL, expressed as an 8-hour TWA, be decreased to 1×10^{-6} mg/m³. Additionally, CDC recommends a VX STEL of 1×10^{-5} mg/m³. An excursion to the STEL should not occur more than one time per day (compared to four times per day for a typical STEL). The recommended WPL is a factor of 10 lower than the CDC's 1988 recommendation. CDC recommends that the GPL for VX be decreased to 6×10^{-7} mg/m³ (a factor of five lower than CDC's 1988 recommendation). An IDLH value of 0.003 mg/m³ is recommended for VX. CDC's final recommendations are summarized in Table 1 below.

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