

TECHNICALLY SPEAKING

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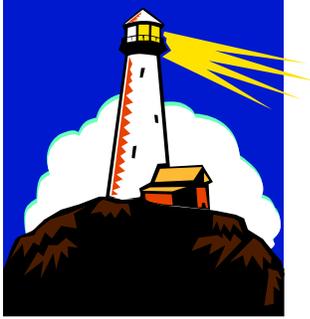
New Regulatory Information Regarding nPB Toxicity

The situation regarding the inhalation toxicity of normal propyl bromide (nPB) has been confused for many years. Manufacturers and various government agencies have cited various exposure limits for nPB, such as acceptable exposure levels (AELs), permissible exposure levels (PELs), and STELs or short term exposure limits, that have ranged from 25 ppm to as high as 400 ppm. The EPA, using studies that showed no observable adverse effects on the liver after a 90-day exposure to 400 ppm of nPB by inhalation, established a concentration range of 50-100 ppm as an industrial exposure guideline.

The American Conference of Governmental and Industrial Hygienists (ACGIH), the agency that is generally deferred to by occupational safety and health professionals when citing chemical exposure values, has now established a Threshold Limit Value (TLV) of 10 ppm for exposure to nPB. This limit is, in some cases, much lower than the exposure limit for nPB proposed earlier by manufacturers and other government agencies. ITW Chemtronics uses normal propyl bromide in three of its solvent cleaners: New and Improved Electro-Wash[®] NR, New and Improved Pow-R-Wash[™] NR, and New and Improved Kontakt Restorer[®]. What does the new exposure level for nPB mean to users of these Chemtronics products?

First, let's look at the meaning of the exposure limit set by the ACGIH. The TLV value is a "time-weighted" average exposure limit, usually the air-borne concentration of vapor averaged over an 8-hour workday. At or below the TLV concentration most workers will experience no immediate or long-term health effects even if exposed to this level of nPB for eight hours a day, forty hours per week, over a working lifetime of forty years. The TLV is also generally taken to be one-tenth the concentration of the "no observable adverse effect level" (NOAEL) established by another government agency, the National Toxicology Program (NTP).

This new exposure limit means that nPB can be toxic if inhaled, but only if workers are exposed to an average of more than 10 ppm of nPB in the air during their 8-hour workday. Immediate adverse health effects, due to exposure at greater than 10 ppm in the air, can result in dizziness, nausea, headache and/or vomiting in some workers. Irritation, burning, tearing and reddening of the eyes and skin can result from direct contact with nPB. If workers using nPB-containing solvents begin to show any of these symptoms they are being overexposed to a chemical contaminant in the air, possibly nPB. Workers who exhibit such symptoms should immediately seek fresh air and ventilation and exhaust systems should be checked. Comments regarding the odor of any of these products are not necessarily an indication of overexposure to nPB, as many people can detect nPB by smell at levels well below the 10 ppm value.



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If engineering controls and practices such as good work area ventilation and the use of sealed containers are in place, or if personal protective devices such as a filter-cartridge breathing mask are used to limit worker exposure to levels of nPB below 10 ppm over an eight hour period, the worker should suffer no adverse health effects from overexposure to nPB. If the efficiency of existing work area ventilation is unknown ITW Chemtronics strongly recommends that air testing be performed to ensure that air-borne levels of nPB are below the 10 ppm concentration level. Alternatively, an OSHA-approved respiratory protection program can be established and a personal respirator equipped with an organic vapor cartridge can be worn by all personnel when working with products that contain nPB. Cleaning products containing nPB should be used only in tanks and containers that can be tightly sealed when not in use. Workers should also be provided with protective gloves and eye protection when working with solvent products containing nPB. If using nPB in a vapor degreasing operation, the equipment should be operated in a manner that will not release excess nPB vapor into the work area.

In summary, the use of normal propyl bromide in the three Chemtronics solvent cleaners is approved under the EPA SNAP program and all three products provide low cost alternatives to more expensive fluorocarbon solvent cleaners. The new TLV limit for nPB should not be of particular concern for the user, but it should stimulate reconsideration of the users existing environmental/safety compliance policies and practices to ensure worker health when using any volatile solvent-based cleaning product.

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