

included the consumption of contaminated vegetables and meats.

For each scenario, multiple iterations were conducted to determine both central tendency risk and "high-end" risk. In all cases, however, the influent concentrations for benzene and 1,1,2-TCA at the headworks were assumed to be the maximum exemption level allowable assigned to carcinogens (1 ppm), and for 2-ethoxyethanol the influent concentration was assumed to be the maximum allowable limit for non-carcinogens (25 ppm). The risk level was set at 10^{-5} (one chance in 100,000) for carcinogens and at a hazard quotient of 1 for non-carcinogens. Finally, for the indirect pathways, the medium used to grow plants was assumed to consist of 100% sludge (at the concentration generated by Chem 9/ Water 9). Because none of the chemicals assessed were found to be of concern for the indirect pathways, EPA did not further refine this assumption. A full description of the data screening methodology can be found in the modeling background document to today's proposal.

2. Issues presented by each solvent

a. Benzene. Benzene is the most ubiquitous of the four solvents under consideration. It has uses in many industries, particularly in organic synthesis and catalyst formation. Benzene is used as a reactant as well as a medium for reactions to take place. Due to increased restrictions on benzene emissions (such as MACT standards, etc.), chemical industries have been encouraged to find alternatives to benzene. It is also one of the more toxic, being classified by EPA as a Class A carcinogen.

As presented in Table 1 of this notice, existing modeled waste concentration limits show that the 1 ppm standard would be protective for the direct air inhalation pathway, even with the more stringent 10^{-6} risk threshold. Moreover, data from the NRMRL treatability database demonstrate that, after the specified treatment, effluent concentrations for benzene generally are below the groundwater modeled level of 0.0177 mg/L (17.7 µg/L), even when the influent benzene level approaches 1 mg/L (1,000 µg/L). Note that treatability numbers are measured at the effluent of a wastewater treatment system, not in the treatment unit itself. However, we believe this comparison is helpful because it illustrates that levels of benzene below concern are achievable in industrial wastewater treatment systems, even when the input level approaches 1 ppm.

Data from the groundwater pathway human health risk analysis also support the addition of benzene to the headworks exemption, with certain conditions. For wastewaters, non-aerated treatment scenarios resulted in exposures above the level of concern for all components, but aerated biological treatment scenarios resulted in unacceptable risk levels only when the primary clarifier wastewaters were managed in an unlined surface impoundment. For sludges, non-aerated treatment sludges and aerated biological treatment primary sludges managed in landfills resulted in risk levels above the level of concern, but aerated biological treatment secondary sludges managed in landfills were below the levels of concern. Indirect exposures to benzene from management of sludges in land farms were not of concern, regardless of treatment type. Benzene exceeded the risk of 10^{-5} for each of the non-aerated scenarios and two components from the aerated biological treatment system (primary clarifier wastewaters being managed in an unlined surface impoundment and primary clarifier sludge being managed in a monofill).

Based on the above results, the Agency is proposing to add benzene to the headworks exemption at the level of 1 ppm with the condition of certain management practices. Specifically, the proposed conditions are that wastewaters containing benzene be managed in aerated biological waste management units and that any surface impoundments used prior to secondary clarification be lined. Aerated biological treatment facilitates biodegradation, reducing the concentration of benzene in the sludge. (*See Risk Assessment to Support the Wastewater Treatment Exemptions (Headworks Exemptions) Proposed Rule*, U.S. EPA 2002, for further information on assumptions used for biodegradation in aerated biological treatment systems). Although the modeled risk for managing primary clarifier sludge (that is generated prior to aerated biological treatment) in a monofill exceeded 10^{-5} , EPA does not believe that additional conditions are needed to be protective of this scenario, primarily because these sludges still would be considered hazardous wastes if they exhibit the Toxicity Characteristic for benzene of 0.5 mg/L.

The Agency seeks comment on the proposal to add benzene to the headworks exemption at the level of 1 ppm with the conditional management requirements, on the necessity of the contingency management requirements, the level of biodegradation achieved through aerated biological treatment systems, industrial solvent use levels of

benzene, and current industrial treatment systems and management practices.

b. 2-ethoxyethanol. 2-ethoxyethanol is the least toxic of the four chemicals under consideration, and is the only non-carcinogen. Due to concerns about workplace exposure and the availability of substitute chemicals, use of 2-ethoxyethanol has been declining in the United States.

As presented in Table 1 of this document, existing modeled waste concentration limits show that the 25 ppm standard would be protective for the direct air inhalation pathway, even without additional treatment. In addition, the limited treatment information on 2-ethoxyethanol available in the treatability database show that treatment can be effective in further reducing the concentration of 2-ethoxyethanol in wastewaters. However, groundwater screening pathway data for 2-ethoxyethanol, also in Table 1, show protective screening levels slightly below the 25 ppm standard (*i.e.*, 13 ppm), indicating a need for further analysis.

The more detailed groundwater pathway human health analysis does support, however, the addition of 2-ethoxyethanol at 25 ppm to the headworks exemption. Both direct and indirect analyses showed 2-ethoxyethanol at 25 ppm in the headworks poses no significant human health risk. (*See Risk Assessment to Support the Wastewater Treatment Exemptions (Headworks Exemptions) Proposed Rule*, U.S. EPA 2002).

The Agency seeks comment on the proposal to add 2-ethoxyethanol to the headworks exemption at 25 ppm.

c. 2-nitropropane. The Agency has very little production, release and toxicity data on 2-nitropropane. The 1999 Toxics Release Inventory (TRI) only listed three facilities nationwide reporting the chemical present in wastewaters. The treatability database from NRMRL has no aqueous technology data on 2-nitropropane. The Agency has only inhalation toxicity information to use for risk modeling purposes. We believe that the available risk information is not adequate to develop an oral benchmark for 2-nitropropane. 2-Nitropropane failed to pass the Phase I air risk screen by a factor of 25 (in contrast to the other three solvents passing, as indicated in Table 1). Because of the large margin of failure for 2-nitropropane, we considered it unlikely that 2-nitropropane would pass a more robust Phase II type of analysis. Based on the large margin of failure in the Phase I screen and the extremely low reported