

limiting pathway as the basis for the risk criterion, the Agency believes it has accounted for all significant risks resulting from disposal and management of the waste outside of Subtitle C.

The agency believes it is also important to identify and discuss some of the limitations of the risk assessment, especially as they relate to determining whether short term and long-term threats to human health and the environment have been minimized.

The analysis does not account for additivity of risk for exposure to multiple constituents. Evaluation of risk additivity can be a complex analysis when even a few constituents are included. In the case of multiple waste constituents, potentially occurring in one or more waste streams that might be considered for exit, the complexity of conducting and analysis of additivity of risk quickly becomes overwhelming. However, EPA believes it will often be the case that one constituent typically drives determinations of whether waste streams exit and additivity would often make little difference with respect to the calculated exit levels.

Exposures to the same constituent from several pathways also are not added together, even though the risk analysis does apportion the available quantity of waste constituents over the different pathways evaluated. Again, EPA believes that often one result (in this case, one pathway) would contribute most of the risk and little would be gained from adding across pathways. EPA requests comment on this issue.

Data also were not available for all human exposure routes for all constituents, although data for high-risk pathways were usually available. Nonetheless, the Agency believes the exit levels can be considered to represent levels that minimize threats to human health and the environment because of the comprehensive evaluation of possible exposure routes, consideration of both human and ecologic risk, selection of the most restrictive pathway overall, and the relatively conservative risk target, 10^{-6} , used in setting the exit levels derived from cancer risk estimates.

As mentioned above, EPA conducted a screening analysis to identify 47 high priority constituents for ecological assessment. EPA did not model the ecological impacts for 36 additional constituents that displayed one characteristic indicating potential ecological impacts. EPA is proposing to set minimize threat levels for 19 of these constituents.

EPA believes that it has adequately assured that the caps to BDAT treatment standards proposed today minimize threats to the environment. The specific ecological risk assessment conducted for 45 constituents (19 of which have minimize threat levels under this proposal) is the most extensive EPA has ever conducted under the RCRA program to date. EPA did not find threshold effects data for all seven groups of ecological receptors for any constituent evaluated for ecological risks. Rather, EPA typically had benchmarks for three to five groups. Nevertheless, its consideration of a broad range of species and use of reasonably conservative endpoints ensures that threats to ecological receptors are minimized.

With regard to chemicals that did not undergo this detailed assessment, EPA has conducted an extensive review of risks to human health, including a thorough review of risks posed by indirect pathways and risks posed by constituents that bioaccumulate in plants and animals consumed by humans. (Bioaccumulation is a key concern for protection of many ecological species.) EPA believes that it is reasonable to assume that the exit levels identified by this analysis also minimize threats to ecological receptors unless it has some definite data indicating that additional protection is warranted. Reliance on these levels is particularly appropriate for those chemicals that did not display one of EPA's ecological screening characteristics. EPA finds it also appropriate for the 15 "minimize threat" chemicals which exhibited one ecological screening characteristic. EPA acknowledges that conducting a specific assessment of ecological risks for these 15 constituents would have provided additional assurance that threat to ecological receptors were minimized. EPA solicits comment on the option of declining to set minimize threat levels for these 15 constituents until it can complete an ecological assessment for them.

d. Risk Targets Minimize Threats

The Agency believes that the risk targets used in the risk analysis to back calculate to waste concentrations minimize threats to human health and the environment. For cancer risks to human, a risk target of one in one million, over a lifetime is the risk target. For non-carcinogens, a hazard quotient (HQ) based on a reference dose or other comparable value from the literature could not exceed one (hazard quotient (HQ)=1). Reference doses or comparable values are based on studies of toxicity

and no-effect levels in test animals and extrapolated, using safety factors, to humans. For ecological receptors, population effects inferred from individual effects and effects on a substantial number of both aquatic and terrestrial species were evaluated.

Other risk targets may be considered in establishing minimize threat levels. The Agency solicits comment on whether apportionment of the RfD ought to be used in establishing minimize threat levels (i.e., $HQ < 1$). The Agency uses 20% of the RfD in setting drinking water standards; a similar approach might be appropriate in establishing minimize threat levels and in establishing exit levels. EPA requests comment on this issue.

2. Public Policy Considerations

Finally, the Agency believes that it represents good public policy to reduce or eliminate unneeded or duplicative regulatory requirements. In this case, the Agency believes that for the initial list of constituents listed in Table 1 of 40 CFR 268.60, treatment to the UTS/LDR standard is no longer required beyond waste constituent concentrations where risks to human health and the environment are insignificant. Because there is no purpose in terms of protecting human health and the environment for retaining the more stringent LDR requirements, the Agency is proposing to revise them to the risk-based levels. This would reduce the overall number of different and distinct regulatory requirements on waste generators and treaters, would rationalize the RCRA regulations, and will provide significant pollution prevention opportunities and incentives. Waste generators would have only one target level to direct their pollution prevention effort toward. If generators met the LDR/exit levels, the waste would not be considered hazardous, and no additional treatment would be required before disposal in a subtitle D facility. Where waste continues to exceed one or more exit levels after LDR requirements are met, subtitle C disposal would be required.

C. Risk-based LDR Levels

1. List of Constituents and Minimize Threat Concentrations

As was mentioned earlier in this section, only modeled constituents' risk-level results are eligible to serve as risk-based LDR levels meeting the statutory requirement of minimize threat. In addition, minimize threat levels are only proposed for those constituents where the risk level is higher (less stringent) than the associated