

## GUEST EDITORIALS

### The Risks of Recycling

Marc C. Bruner, PhD

Many of us find the idea of recycling a sound one at an intuitive level, since it seems to make more sense to reuse something than throw it away. When we move beyond the concept, to implementation, challenges develop and recycling has been subject to some criticism in the last few years based on the costs and efficiency of collecting and processing materials recovered from the solid waste stream. This is particularly true now that the perceived shortage of landfill space in the 1980's has turned into a capacity glut in the 1990's. But there is another question, or criticism of recycling that has been developing, that concerns the risks of using materials recovered from, or produced from solid waste. These new issues are developing at the point where the cleanup of sites using the principles of Risk Based Corrective Action, meets the placing of solid waste derived materials upon the land.

The State of Florida Department of Environmental Protection has adopted rules that implement the principles of Risk Based Corrective Action in the cleanup of storage tanks, dry cleaning sites and brownfields. Through that process, they have implemented a legislatively mandated risk level of one in one million for lifetime cancer risk, and a health hazard index of one for non-cancer effects. This process has also lead to the development of a table of Soil Cleanup Target Levels for a long list of chemicals, which in oversimplified terms identifies what constitutes "clean" for sites intended for residential or industrial uses. At these cleanup sites, if you exceed the Soil Cleanup Target Level values, site-specific risk assessment and engineering and institutional controls may be utilized as an alternative to further cleanup.

The Florida Department of Environmental Protection has initiated a public participation effort to involve stakeholders in the

further development and implementation of Risk Based Corrective Action and the Soil Cleanup Target Level table in other cleanup and regulatory efforts. It is called the Contaminated Soils Forum, and a substantial quantity of information is available about the Forum at the Florida Department of Environmental Protection web site (<http://www2.dep.state.fl.us/waste/programs/brwnfld/csf.htm>). It has been in the context of this forum that questions about the risks of recycling and reuse have surfaced.

The forum discussions of reuse and recycling have revolved around this question: Should soil-like materials derived from solid waste be allowed to be placed upon the land, if the levels of chemicals present exceed those identified in the Soil Cleanup Target Level table? Examples include materials such as dredge spoil, street sweepings, compost made from solid waste or waste water sludge, soils recovered from the recycling of construction and demolition debris, ash from municipal waste combustors used as structural fill, and waste water treatment sludge applied to agricultural land as a soil amendment. The allowable levels for contaminants in the Soil Cleanup Target Level table are so low that all these materials regularly exceed the residential soils limit, and most exceed the limit for industrial soils. This suggests to some that before these materials can be applied to the land, a risk assessment should be done to evaluate the proposed use, and engineering and institutional controls may be needed to assure exposure levels are maintained.

The potential problem is that this opens Pandora's box when it comes to evaluating the risks of applying materials to the land. If you require solid waste derived materials to be evaluated in this fashion, why not other commodities? Information presented to the Contaminated Soils Forum shows that all the fertilizers evaluated exceeded the residential, and most exceeded the industrial Soil Cleanup Target Level values. Applying pesticides? Forget it. Other uses can also be questioned. If there is a limitation on the amount of lead allowed in soils at cleanup sites or in soil additives, why are outdoor shooting ranges allowed to

"apply" lead directly to the land by the pound?

The expanded application of risk-based evaluation leads to questions about risks beyond the narrow sphere of recycling. Examples of these questions include:

- Should the principles of Risk Based Corrective Action be used as the standard for other regulatory decision-making activities, beyond site cleanup?
- If risk becomes the standard for review, is there any activity for which a health or ecological risk assessment could not be justified or requested?
- Is the establishment of single acceptable level of risk (e.g., one in one million), appropriate for all cleanup and regulatory decisions?
- If risk-based evaluation is adopted for new activities or commodities, can or should this risk standard be applied retroactively to existing products?
- At what point does the consideration of benefits, as an offset to risk, enter into the regulatory evaluation?

Risks associated with a single item or activity cannot be evaluated in isolation. Risk exists in the context of other activities. My concern is that if context is not considered, the risks of recycling will appear so great that opportunities will be lost.

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*Address correspondence to Marc C. Bruner, Solid Waste Authority of Palm Beach County, 7501 North Jog Road, West Palm Beach, FL 33412; (e-mail) [mcbruner@swa.org](mailto:mcbruner@swa.org)*

### Reflections on Sustainable Development

Thomas R. Cuba, PhD, CEP

I find myself in the curious position of being the Chairman of the NAEP Sustainable Development Working Group and at the same time having serious doubts that sustainable development will ever occur. I question our ability to achieve sustainable development even on a limited basis, much