Deficiencies in the US EPA's Characterization of the Protection Provided by Subtitle D Landfilling of MSW

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The US EPA Office of Solid Waste and Emergency Response has developed a webpage entitled "MSW Disposal," which has as its lead-in,

> *"Modern landfills are well-engineered facilities that are located, designed, operated, monitored, closed, cared for after closure, cleaned up when necessary, and financed to insure compliance with federal regulations. The federal regulations were established to protect human health and the environment. In addition, these new landfills can collect potentially harmful landfill gas emissions and convert the gas into energy."*

This statement is an attempt by the US EPA to mislead the public into believing that the US EPA's Subtitle D regulations provide for landfills that are protective of public health and the environment for as long as the wastes in the landfill are a threat to cause groundwater pollution and be adverse to public health and the environment. The facts are that today's Subtitle D landfills are based on a fundamentally flawed technological approach for MSW management that at best only postpones when significant environmental problems will occur as a result of the landfilled wastes.

On the Agency's webpage, under the heading "Federal Landfill Standards" are a series of bulleted items. The first of these bullets states,

> *"Location restrictions ensure that landfills are built in suitable geological areas away from faults, wetlands, flood plans, or other restricted areas."*

What the US EPA is not saying, however, is that the regulations allow landfills to be sited at geologically unsuitable sites with respect to providing natural protection of groundwaters from pollution by landfill leachate when – not "if," but "when" – the landfill liner system fails to prevent leachate from migration through it. The US EPA regulations do not address some of the most important issues in landfill siting – namely, the Agency's regulations allow the siting of landfills in areas, such as fractured rock, cavernous limestone, etc., where it is virtually impossible to monitor for leachate-polluted groundwaters before widespread pollution occurs.

The second bulleted item states,

> *"Liners are geomembrane or plastic sheets reinforced with two feet of clay on the bottom and sides of landfills."*

The Agency does not discuss the fact that the landfill liner systems will ultimately fail to prevent leachate from migrating from the landfill into the underlying groundwater for those landfills sited above groundwater.

The third bulleted item states,

> *"Operating practices such as compacting and covering waste frequently with several inches of soil help reduce odor; control litter, insects, and rodents; and protect public health."*

This is another misleading statement, in that today's "modern" landfills can cause highly significant odor problems on adjacent properties. The Agency did not address the issue of providing adequate buffer lands to dissipate airborne releases on the landfill property from the landfills, such as odors, gases, etc. The Agency regulation allows the landfill owner to dispose of waste within a few hundred feet of the edge of the property. At least a mile to two miles of buffer lands between where the wastes are deposited and the adjacent property should be available to dissipate odors released from landfills that are operated in accordance with the Agency's guidance, where several inches of soil are placed on top of the waste each day. This buffer land should be owned by the landfill owner.

The fourth bulleted item states,

> *"Groundwater monitoring requires testing groundwater wells to determine whether waste materials have escaped from the landfill."*

This statement is a severe distortion of the facts/practice with respect to developing a reliable groundwater monitoring program at Subtitle D landfills. While Subtitle D landfill regulations require that a highly reliable groundwater monitoring program be developed to detect leachate-polluted groundwater when it first reaches the point of compliance for groundwater monitoring, in fact, the groundwater monitoring systems allowed by states and the US EPA, with monitoring wells spaced hundreds of feet apart at the point of compliance, are widely recognized as being largely cosmetic with respect to being able to effectively detect groundwater pollution when it first reaches the point of compliance for monitoring. The basic problem is that the monitoring wells used have zones of capture of only about a foot on each side, and when they are spaced hundreds of feet apart, leachate-polluted groundwater plumes can readily pass between the monitoring wells at the point of compliance and not be detected by them.

The fifth bulleted item states,

> *"Closure and postclosure care include covering landfills and providing long-term care of closed landfills."*

The postclosure care requirements of Subtitle D regulations are widely recognized as being grossly deficient in providing the closure and postclosure care that is needed to provide even a reasonable degree of protection of groundwater resources, public health and the environment

from the landfilled waste. The municipal and industrial solid waste in today's "dry tomb" landfills will, for most components, be a threat to groundwater resources, public health and the environment forever. Postclosure care provides minimal funding for a 30-year period after closure. There is no assured funding after the 30-year postcloure period for landfill cover maintenance, groundwater monitoring and inevitable groundwater pollution remediation for the infinite period of time that the waste will be a threat.

Another serious flaw with this statement on postclosure care is that the key to keeping the "dry tomb" landfill (plastic sheeting and clay lined landfill) as an effective landfill containment system is the landfill cover, which must keep moisture out of the landfill forever. It is not possible, however, with the current approach toward developing landfill covers under Subtitle D, to detect when the low-permeability layer in the cover (plastic sheeting) fails, and moisture that passes through the topsoil and drainage layer penetrates into the waste, generates leachate, which will, through the failure of the liner system, ultimately pollute groundwaters.

The sixth bulleted items states,

> *"Corrective action controls and cleans up landfill releases and achieves groundwater protection standards."*

The Agency fails to indicate that the key to effective remediation is the ability of the monitoring program to detect polluted groundwater when it first reaches the point of compliance for groundwater monitoring. The unreliability of the typical Subtitle D landfill monitoring programs means that the Agency's corrective action program will not be protective of offsite groundwater quality, public health and the environment.

The last bulleted item states,

> *"Financial assurance provides funding for environmental protection during and after landfill closure (i.e., closure and postclosure care)."*

Basically, today's Subtitle D MSW landfills will eventually become Superfund (or equivalent) sites in the future. There will be widespread groundwater pollution at many of the landfills, due to the fundamentally flawed landfilling approach and the inadequate containment and monitoring systems used for those landfills that conform to minimum Subtitle D regulations. With the federal government and the states cutting back on funding available for environmental protection, there is no assurance that funding will be available in the future to protect those who want to use groundwaters within the sphere of influence of a "modern landfill" for as long as the landfill will be a threat.

It is unfortunate that, under the current administration, the US EPA Office of Solid Waste and Emergency Response is mounting a propaganda campaign in an attempt to mislead the public into believing that Subtitle D landfills will be protective of groundwater resources, public health and the environment from pollution by landfill leachate, as well as releases of landfill gases, including odors, for as long as the waste in the landfill will be a threat. Today's modern

"well-engineered" MSW facilities are far from being a reliable approach for preventing future Superfund sites.

Detailed background information on each of these issues is provided in publications available from www.gfredlee.com.

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