

RECOMMENDATIONS OF THE  
ENVIRONMENTAL ADVISORY COUNCIL  
ON THE LAND APPLICATION OF WASTE DERIVED MATERIAL  
February 15, 2007

**Introduction**

In March, 2006, Director Steven Chester asked the Environmental Advisory Council (EAC) to provide recommendations about programs and policies governing the application of materials to the ground to protect public health and the environment in light of cost and benefits (to all parties) and the need for consistency among programs. Director Chester asked that the primary focus of this inquiry should be industrial by-products and compost.

The EAC has spent the remainder of its 2006 – 2007 term on this project. The EAC was briefed on the major Department of Environmental Quality (DEQ) programs governing the application of materials to the ground, including the solid waste, biosolids, septage, manure, and groundwater discharge programs. As requested by Director Chester, we focused on industrial by-products and compost (“waste derived materials”) regulated under Part 115 of the Natural Resource and Environmental Protection Act, 1993 PA 451, as amended (NREPA). This inquiry included wide-ranging discussions of the costs and benefits associated with land application, the concepts underlying soil health, principles that should be used in managing land application of waste-derived materials, the administrative structure of the Part 115 land application program, and the criteria that should be used to determine when land application of waste derived materials is permissible. Based on this review, our recommendations, which pertain only to land application under Part 115, follow.

We understand that the DEQ intends to develop proposed administrative rules based on these recommendations, and that the public will have an opportunity to review and comment on those rules, before changes to the program are adopted. These recommendations are the result of a consensus approach in which the EAC is speaking as a body and not as a group of individuals. Accordingly, individual members reserve the opportunity to comment on the rules proposed by the DEQ.

## Recommendations

The EAC believes that material derived from solid waste can be applied to the land for beneficial purposes, provided it does not pose an unacceptable risk to human health and the environment. When the law does not address a particular land application situation, the DEQ may exercise discretion. We recommend that:

1. The DEQ should use the generic residential criteria developed under Part 201 (“Part 201 criteria”) as the baseline for determining acceptable risk. Thus, the general rule should be that the Part 115 program would not authorize land application if the concentration of a constituent in the environment would exceed Part 201 criteria.
2. A constituent can be land applied at or below a concentration identified under Part 201 as the statewide background level.
3. The DEQ should include for use in this manner those Part 201 criteria that are derived to protect the aesthetic qualities of resources, such as those protecting unacceptable odors of groundwater.
4. In determining the allowable concentration of a constituent in the environment, the DEQ should account for:
  - a. The concentration of the material resulting from application.
  - b. When demonstrated by the applicant, or as a function of law:
    - 1) The physical and/or chemical integrity of the material, which affects the rate at which individual constituents are released to the soil solution and the environment.
    - 2) A reduction in concentration that might occur through natural processes immediately or over a reasonable period of time taking into consideration biogeochemical processes that affect fate and transport.
5. The DEQ should employ certain exceptions to the above general approach:
  - a. A constituent can be land applied at a concentration at or below a site-specific naturally occurring background level of the constituent in the environment, even though that level may be above Part 201 criteria. Development of a site-specific naturally occurring background level must be approved by the DEQ on a case-by-case basis.

- b. The DEQ can vary from the Part 201 criteria if it can determine that the exposure assumptions underlying those criteria are not reasonably likely to reflect the circumstances under which the land application will occur. The ability to make this determination can turn, in part, on the probable long term fate of the material in the environment and/or the ability of the DEQ to ensure conditions that limit exposures remain in place.
6. With respect to determining exposure assumptions in making land application decisions:
- a. A single set of conservative exposure assumptions should be used when a material is likely to be used in a wide variety of situations by a wide variety of people with varying levels of expertise (e.g., material bagged for use by homeowners). More site-specific and less conservative assumptions can be used when a material is likely to be used by a small number of relatively sophisticated users with greater expertise (e.g., bulk application of material for nutrient value by agricultural operations).
  - b. Land application approvals should account for the persistence of the material in the environment and the potential for a constituent to accumulate over time. Repeated applications will only be approved if relevant criteria will not be exceeded.
  - c. Management controls on application and/or use of the application site can be used to modify exposure assumptions used to assess risk provided there is adequate assurance that the controls will be followed. Management controls include, for example, conditions on how the material is applied (e.g., limitations on volume of application and incorporation of material into the soil), and long term controls (e.g., maintenance of exposure barriers).
  - d. Use of engineering (e.g., exposure barrier) and legal (e.g., deed restriction) management controls can be used to limit exposure risks: 1) of relatively short duration, 2) that would be of relatively low magnitude should the mechanisms fail, and/or 3) where the controlling entity is durable (such as a governmental unit). Land application that would require management controls involving complex systems to ensure durability (e.g., financial assurance mechanism) should not be allowed.
7. In addition to ensuring land application does not present an unacceptable risk with reference to the Part 201 criteria as discussed above, land application should not be allowed in a manner that results in nuisance conditions or unacceptable resource impacts by over-application or misapplication (e.g., surface water impacts caused by runoff). But the DEQ need not consider physical limitations on the use of property (e.g., a fill that limits suitability of the site for future construction) unrelated to public health or the environment.

8. In evaluating risks posed by land application proposals, larger scale applications that have the potential to adversely impact large or sensitive populations or ecosystems should be subject to more thorough evaluation than other applications.
9. Because it is not well equipped to evaluate land application proposals on the basis of the benefits provided, the DEQ should not accept a greater level of risk than would normally be acceptable based on claims of the benefit to be derived. However, in making land application decisions, the DEQ should consider the concept of benefit as follows:
  - a. In general, a bona fide benefit deriving from land application should be a prerequisite to approval. This is a low threshold designed simply to prevent disposal of material that presents the risk inherent in the Part 201 criteria under the guise of land application.
  - b. As an exception to this general rule, (and in recognition of a similar structure in Part 115 statutory language) a benefit need not be derived from the land application of a material that the DEQ finds poses an inherently low risk far below the Part 201 criteria.

The above recommendations are based on the current administrative structure of the Part 115 land application program and state of knowledge available to implement the program. The EAC notes the following reservations and areas for development:

1. The DEQ does not currently obtain or maintain adequate information on sites where waste-derived material is land applied. This deficiency should be remedied and the information made publicly available.
2. The recommendation to use the Part 201 criteria is not an endorsement of those criteria per se. It is recognition that a better alternative framework does not currently exist and that public policy should foster consistent approaches to the risks associated with exposures to contaminants in the environment.
  - a. The EAC recognizes that the environmental conditions encountered by waste derived material applied to the land may differ from those assumed in calculating environmental fate in the context of the Part 201 criteria. This disparity may cause inaccuracies in determining risk in the context of land application. The EAC encourages the state and the regulated community to support further study of this issue with the goal of more accurately describing and managing risk caused by land application of waste derived material.
  - b. Likewise, changes in the Part 201 program could diminish its utility for use in the context of land application decisions.
  - c. Therefore, since public policy should reflect new information and understanding, the appropriateness of using Part 201 criteria as the foundation

for land application decisions under Part 115 should be periodically reevaluated.

3. The EAC recognizes principles of sustainability that underlie the need to maintain and improve soil health. However, the DEQ does not have the capability to make fine judgments based on perceived increased benefits or threats to soil health. To address this deficiency, the DEQ should adopt a long-term policy that fosters soil health and periodically review how the land application program, including the use of the Part 201 criteria, should be modified in furtherance of that policy. The EAC suggests that the Department consult with the Department of Agriculture and academic expertise to help inform its efforts in promoting soil health.
4. The EAC recognizes that the management of dredge spoils raises different, though somewhat similar, issues than the land application of waste derived material. The EAC was limited by time in our ability to consider those issues. Accordingly, these recommendations do not apply to dredge spoils.

## **Closing**

The EAC's examination of the DEQ land application programs was a long and difficult one. As members of the EAC, we have gained an understanding of the problems and limitations encountered by the DEQ in this difficult program area. We hope these recommendations will assist the DEQ's efforts and provide a meaningful guide for future decisions.

The EAC appreciates the information and support for our efforts provided by the DEQ staff, particularly those in the Waste and Hazardous Materials Division, Water Bureau, and Remediation and Redevelopment Division.