



Environmental Fact Sheet

Waste-Derived Fertilizers

Concerns have been raised regarding the use of certain wastes in the manufacture of agricultural fertilizers and soil amendments, and the potential for ecological or human health risks, as well as crop damage, when such fertilizers are applied to farmlands. In conjunction with state governments, the U.S. Environmental Protection Agency (EPA) has launched a major effort to assess whether or not contaminants in fertilizers may be causing harmful effects, and whether additional government actions to safeguard public health and the environment may be warranted.

Wastes Used in Fertilizers

Most fertilizers that are commonly used in agriculture contain the three basic plant nutrients: nitrogen, phosphorus, and potassium. Some fertilizers also contain certain "micronutrients," such as zinc and other metals, that are necessary for plant growth. Materials that are applied to the land primarily to enhance soil characteristics (rather than as plant food) are commonly referred to as soil amendments.

Fertilizers and soil amendments can be derived from virgin raw material, composts and other organic matter, and wastes, such as sewage sludge and certain industrial wastes. These wastes can include some that are regulated as hazardous under state and federal regulations.

Industrial waste materials are often used in fertilizers as a source of zinc and other micronutrient metals. Current information indicates that only a relatively small percentage of fertilizers is manufactured using industrial wastes as ingredients, and that hazardous wastes are used as ingredients in only a small portion of waste-derived fertilizers. Some fertilizers and soil amendments that are not derived from waste materials can nevertheless contain measurable levels of heavy metals such as lead, arsenic, and cadmium.

EPA's longstanding policy encourages the beneficial reuse and recycling of industrial wastes, including hazardous wastes, when such wastes can be used as safe and effective substitutes for virgin raw materials. Although EPA is examining whether some fertilizers or soil conditioners may contain potentially harmful levels of contaminants, the Agency believes that some wastes can be used beneficially in fertilizers when properly manufactured and applied.

Fertilizer Regulations

While a number of states currently have testing and labeling requirements for fertilizers, such requirements typically address only the agriculturally beneficial ingredients (e.g., plant food) of the fertilizers. Relatively few states require comprehensive testing and disclosure of all chemical components of fertilizers. As a general rule, soil amendments are subject to fewer state regulatory controls than are fertilizers.

Certain types of wastes that are used for agricultural purposes are subject to federal regulations, which are often administered by states. Sewage sludges that are used in agriculture are regulated under the Clean Water Act, and are currently subject to concentration limits for the metals arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. In addition, for fertilizers that contain hazardous waste, EPA standards specify limits on the levels of heavy metals and other toxic compounds that may be contained in the fertilizer products. These concentration limits were based on the “best demonstrated available technology” for reducing the toxicity and mobility of the hazardous constituents. However, fertilizer made from one specific type of hazardous waste—air pollution control dust generated during steel manufacturing—is not subject to those concentration limits. This exemption was based on a 1988 finding by EPA that the composition of this particular waste is comparable to the materials that would otherwise be used to make this type of fertilizer, and that its typical use was not harmful. All other fertilizers that contain hazardous wastes are, however, subject to the contaminant concentration limits established by EPA.

In some states, the regulations on hazardous waste use in fertilizers may be more stringent than the federal standards, since states can adopt regulations that are more stringent and/or broader in scope than the federal regulations. Likewise, some states may regulate the use of nonhazardous wastes in fertilizers, although such practices are not currently subject to regulation at the federal level.

Actions Being Taken by EPA

To determine whether contaminants in fertilizers (both waste-derived and nonwaste-derived) may pose unacceptable risks to human health or the environment, EPA is currently assessing: (1) the types of wastes that are being used in fertilizer manufacture, and the composition of fertilizers with regard to toxic metals and other potentially hazardous constituents; (2) the potential for soil contamination, and associated risks to human health and the environment, from nonbeneficial constituents, based on fertilizer content and application rates; (3) incidents of crop damage or other problems thought to be related to waste-derived fertilizer use or fertilizer containing hazardous constituents; (4) current regulatory requirements for fertilizer composition in various states and in foreign countries.

Since the American Pacific Northwest has been the focus of many concerns regarding waste-derived fertilizers, EPA's Region 10 office is the lead federal organization working with Washington and other states to coordinate state and federal efforts in this area. Region 10 is an active participant in the Washington State Fertilizer Advisory Workgroup, and will be assisting the state in conducting further field studies and research on contaminants in fertilizers in the state of Washington.

EPA will carefully review all collected information to determine the nature and magnitude of the problem, if any. Based on the outcome of this investigation, EPA will consult with the U.S. Department of Agriculture (USDA) to determine whether additional actions beyond current regulations are necessary to protect public health and the environment, and/or agricultural land resources. Any such actions also will be done in consultation with the states, in order to complement and reinforce state efforts underway. Although it is not clear at this time that additional government action will be needed, possible actions that could be taken by EPA or the states include: (1) issuing guidance or regulations on labeling of fertilizer ingredients; (2) further restricting the use of hazardous waste in fertilizers; or (3) issuing comprehensive new regulations for contaminants in all fertilizers and soil conditioners.

When the Agency completes its initial assessment of available data on contaminants in fertilizers, it will identify data gaps and determine what further information is needed. As new information becomes available, EPA will continue to provide updates on its activities and findings related to the use of fertilizers.

For More Information

This fact sheet is available in electronic format on the Internet at <http://www.epa.gov/oswer/hazwaste>. For additional information or to order copies of this or any other document, call the RCRA Hotline. Callers within the Washington Metropolitan Area must dial 703-412-9810 or TDD 703-412-3323 (hearing impaired). Long-distance callers may call 1-800-424-9346 or TDD 1-800-553-7672. The RCRA Hotline operates weekdays, 9:00 a.m. to 6:00 p.m. Write to the RCRA Information Center (5305W), US EPA, 401 M Street, SW, Washington, DC 20460.