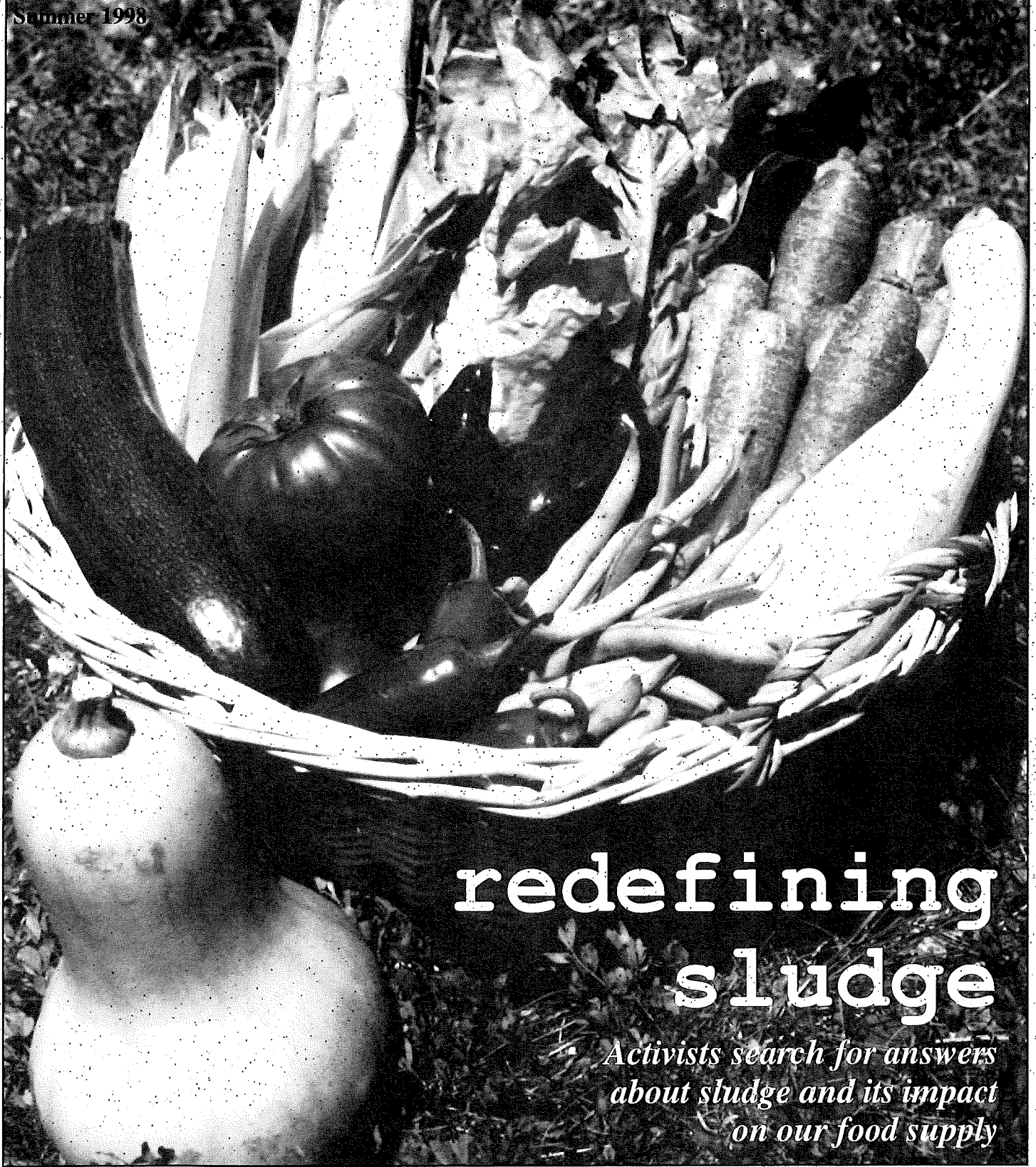


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THE WORKBOOK

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redefining sludge

*Activists search for answers
about sludge and its impact
on our food supply*

Food safety and sludge

By Jackie Hunt Christensen

American farms suffer the consequences of EPA's false wisdom, weak regulations

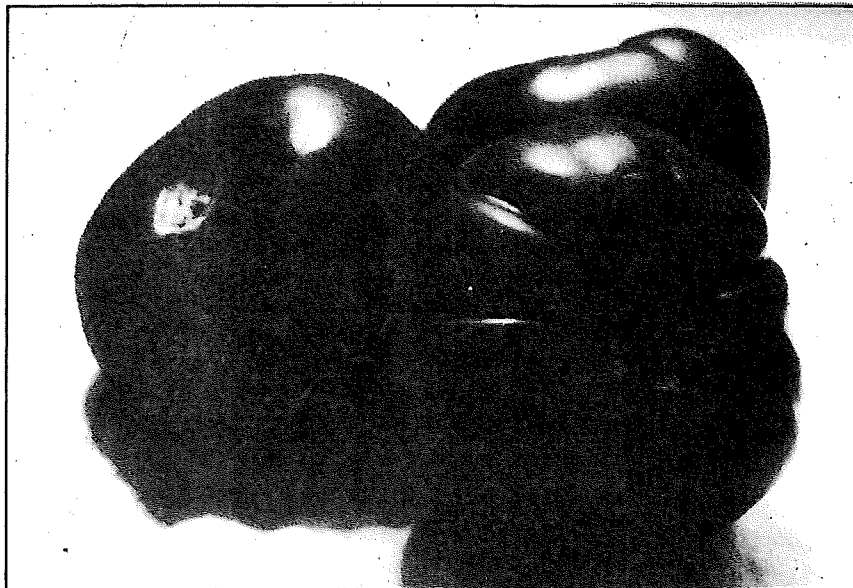
Since the beginning of the industrialized age, many sectors of the American economy have sought to deposit the detritus of their own industries upon farmers, food producers, and consumers. Among the numerous examples of this "dumping" include the modification of the technology that gave us World War II nerve gases to create organophosphate pesticides; and the use of radioactive waste for irradiation to kill the pathogens that remain on the food after the application of sewage sludge to cropland. Two other practices that have recently garnered national attention are the use of toxic industrial wastes from steel mills, cement kilns, paper mills and other industrial processes in fertilizers used to grow food and garden crops; along with the land application of sewage sludge from sewage treatment plants that accept toxic wastewater discharges from polluting industries.

Fertilizer. Ironically, state and federal regulatory agencies may have encouraged the use of these practices. Steel production, cement manufacturing and many other industrial techniques generate wastes that contain dioxin, lead, cadmium, arsenic, and other pollutants. But because these wastes also contain lime, calcium, phosphorus, zinc or other minerals beneficial to agriculture, the Environmental Protection Agency (EPA) and other state and federal agencies have encouraged the "recycling" of the wastes into fertilizers. In the award-winning July 1997 exposé, "Fear in the Fields," the *Seattle Times* reporter Duff Wilson noted that at least 26 states have programs in place to match hazardous waste generators with recyclers. Industry consultant and chemist Ed Kleppinger has remarked, "The last refuge of the hazardous-waste scoundrel is to call it a fertilizer or soil amendment and dump it on farmland."

In its March 1998 report, *Factory Farming: Toxic Waste and Fertilizer in the United States, 1990-1995*, Washington, D.C.-based Environmental Working Group researchers found that during the five-year period studied, more than 271 million pounds of toxic waste tracked by the EPA's Toxics Release Inventory (TRI) was sent to 450 fertilizer

manufacturers and businesses that appeared to be farms. Sixty-nine toxic chemicals were represented in those wastes.¹

Many of the wastes being put into fertilizers are taken from pollution control equipment at factories. In other words, industries dutifully capture pollutants in scrubbers and other equipment, only to turn around and spread the captured wastes directly onto the land, posing a major threat to health and the environment.



There are currently no federal regulations requiring fertilizer manufacturers to test their products to determine the amounts of heavy metals, dioxin, or other pollutants they may contain, nor are fertilizer companies required to list anywhere the sources from which they obtain minerals. In fact, hazardous steel mill waste has a special exemption under federal hazardous waste law that specifically removes all standards and requirements for disposal (i.e., testing, manifesting, and tracking) if it is used for fertilizer. Dick Camp, president of the Bay Zinc Fertilizer Company of Moxee City, Washington, seemed mystified himself: "When it goes into our silo, it's a hazardous waste. When it comes out of the silo, it's no longer regulated. The exact same material. Don't ask me why. That's the wisdom of the EPA."²

The ramifications of this lack of regulatory oversight combined with EPA's endorsement of recycling have been demonstrated in very real economic terms on farms across the country:

- Central Washington farmers have lost crops, cows and horses and traced the problem back to fertilizers they used.
- In Tifton, Georgia, a mixture of hazardous waste sold as liming material killed more than 1,000 acres of peanut crops.

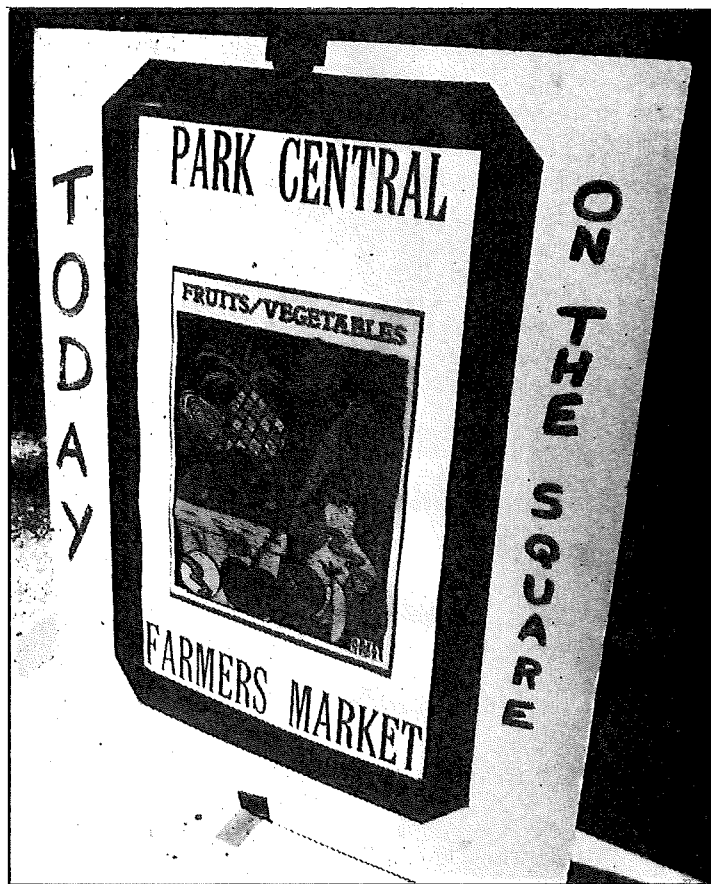
• A uranium processing plant in Gore, Oklahoma, sprayed its radioactive waste on grazing land and local residents believe that the waste caused mutations in animals as well as devastating health problems among local residents.

• Most recently, state officials in Washington³ and investigative journalists at the *Dallas Morning News*⁴ tested Ironite, a fertilizer made from mining waste and which is sold in garden centers around the country, and found industrial-cleanup levels of lead and arsenic.

There are urgent environmental and public health concerns resulting from the use of toxic waste in fertilizer. Farmers and farm workers are exposed to it in the fields. Food crops can take it up. Wildlife as well as farm animals may consume it. (Dairy cows actually ingest a lot of soil as they graze, for example). The toxic constituents run off into groundwater that feeds into surface water bodies and can be blown with soil, and people and pets can track the toxic dust into homes. House dust is a significant toxic exposure route for children — and dust in farm workers' homes tends to have higher concentrations of pollutants.⁵

Sewage Sludge. "I am appalled at what I would term the "total disregard for human health" and the fact that the Environmental Protection Agency is actively promoting and is, in fact, lulling communities throughout the United States into initiating programs for the composting of sewage sludge," said Melvin Kramer, an infectious disease epidemiologist who has been researching the issue since the late 1970s. He says the EPA's plan for sludge disposal poses "a significant health hazard to the population in general, but especially to the elderly, children, and the infirm, both in terms of nuisances as exemplified by excessive putrid odors and minor allergic reactions ... to life-threatening diseases."⁶

Sludge is the non-liquid portion of the waste that flows through a sewage treatment plant. As with "recycling" of hazardous industrial wastes for their mineral content, the use of sewage



sludge, or "biosolids," is being touted by many as a way to recycle the nutrient potential of human waste. In theory, this could be beneficial both to farmers and municipalities, if human waste and industrial waste were segregated. As the Cornell (University) Waste Management Institute notes, "While recycling sludges is a desirable goal, caution is warranted since many pollutants are persistent and agricultural soils are irreplaceable."⁷ Indeed, sewage sludge from most major metropolitan areas does not contain only the wastewater from residential areas, but also the toxic effluent from industrial dischargers deemed too small to require their own National Pollution Discharge Elimination

Consumers cannot tell if store-bought fruits and vegetables have been produced from sludge-fertilized soil or not. Farmers markets and food co-ops may be the best bet for ensuring produce is organic and free of the toxins contained in sludge. *Photos by Cynthia Taylor.*

Quotable Quote

"Proponents of the land spreading of sewage sludge as a fertilizer equate sewage sludge to human waste, and argue that man has used human waste as a fertilizer for centuries. That man has used human waste as a fertilizer is certainly true. But he used just human waste, and did not mix it with untold and unknown amounts of industrial waste before using it. To paraphrase Garrison Keillor, the relationship between sewage sludge and human waste is about the same as the relationship between the color green and the number seven. The number seven may sometimes be colored green, but it takes a great stretch of the imagination to connect the two."

— Stanford L. Tackett, Ph.D.,
1997 Educational Sludge Forum,
Lancaster, Pennsylvania



System (NPDES) permit from the state regulatory agency. These small industrial dischargers may include metal plating operations, dry cleaners, hospitals and dental clinics (which may discharge mercury, solvents, and other toxic chemicals) and any number of other businesses that can dump legally small amounts of pesticides, solvents, heavy metals, polychlorinated biphenyls, and other chemicals down the sewer. What's more, there may

be hundreds of industrial dischargers to one publicly owned treatment works (POTW), which means that, in the aggregate, the "small" amounts of toxics released by individual businesses add up to tons of pollution.

The primary and secondary treatment used by most POTWs involve bacteria to digest organic wastes and are in no way intended or able to handle heavy metals or

synthetic chemicals. Thus, those compounds — over 60,000 toxic substances and chemical compounds⁸ — pass through the POTW largely intact and remain in the sludge. For example, the Cornell Waste Management Institute estimates that 90 percent of the dioxins in wastewater entering a POTW will be retained in the sludge.⁹ When that

sludge is applied to farm fields, the crops may take up the toxic constituents.

Dr. Stanford Tackett, a chemist and expert on lead contamination, has warned, "The use of sewage sludge as a fertilizer poses a more significant lead threat to the land than did the use of

Many communities, including metropolitan areas, are already marketing their sewage sludge for agricultural uses, either through direct land application or through retail sales as fertilizer products.

leaded gasoline," he says. "All sewage sludges contain elevated concentrations of lead due to the nature of the treatment process ... Lead is a highly toxic and cumulative poison. Lead poisoning can cause severe mental retardation or death. It is now known that lead interferes with the blood-forming process, vitamin D metabolism, kidney function, and the neurological process. From the standpoint of lead alone, sludge is 'safe' only if you are willing to accept a lowered IQ for the young children living in the sludge area. And what about the other toxins?"¹⁰ It is important to note that in the U.S. Environmental Protection Agency (EPA) "Part 503" rules, "'EQ' [exceptional quality] standards [except for lead] are significantly higher than standards for sludge products allowed elsewhere for unrestricted use, [and] allow the application of sludges with metals up to the ceiling limits ... to be used in home gardens."¹¹

Many communities, including metropolitan areas, are already marketing their sewage sludge for agricultural uses, either through direct land application or through retail sales as fertilizer products. "Milorganite," which has been produced by the city of Milwaukee for 70 years, is one such product. Milorganite production has been fraught with problems, including two explosions (one of which seriously injured a worker); \$4.5 million in costs associated with repairs and other expenses related to the accidents; and violation of its Department of Natural Resources (DNR) air permit for the discharge of volatile organic compounds.¹² Chicago, Houston and Los Angeles also commercially market their sludge fertilizer. Other cities give away their sludge, because as one consulting firm put it, "Regardless of the solids treatment process employed, the residual is the waste of a wastewater treatment process, a byproduct that is not highly sought after."¹³

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In public comments on the draft national standards for organic agriculture, consumers have voiced their resounding opposition to sewage sludge.¹⁴ In addition to what many believe are true health and environmental risks from agricultural use of sewage sludge, farmers and food producers must face the perception of risk by many consumers and the economic impacts of buying decisions based on those perceptions. **WB**

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ENDNOTES

1. *Factory Farming: Toxic Waste and Fertilizer in the United States, 1990-1995*, Environmental Working Group, 1998; Washington, DC. p. ii.

2. Ibid.

3. Phone conversation with Robin Schoennessa, Washington state Department of Agriculture, May 21, 1998.

4. "High Levels of Lead Found in Fertilizer; Arsenic, Metals Used Are Safe, Company Says," *Dallas Morning News*, March 30, 1998.

5. "Pesticides in household dust and soil: Exposure pathways for agricultural families," *Environmental Health Perspectives*, 103 (12): pp. 1126-1134.

6. Melvin N. Kramer, Ph.D., executive summary of testimony given Oct. 1, 1992 before the U.S. House of Representatives, Committee on Merchant Marine and Fisheries, Subcommittee on Coast Guard Navigation, Hearing on Ocean Dumping Enforcement and the Current Status of Research Efforts, pp. 1-2, as cited in *Toxic Sludge Is Good For You: Lies, Damn Lies and the Public Relations Industry*, John Stauber and Sheldon Rampton, Common Courage Press, 1995, pp. 107-108.

7. *The Case for Caution: Recommendations for Land Application of Sewage Sludges and an Appraisal of the U.S. EPA's Part 503 Sludge Rules*. Working Paper. Ellen Z. Harrison, Murray B. McBride and David R. Bouldin, Cornell Waste Management Institute, August 1997, p. 3.

8. *Toxic Sludge Is Good For You*, p. 104.

9. *The Case for Caution*, p. 3.

10. Stanford L. Tackett, "The Myth of Sewage Sludge Safety," delivered at the Municipal Sewage Sludge Conference, State College, PA, May 21, 1994, as cited in *Toxic Sludge is Good for You*, p. 108.

11. *The Case for Caution*, p. 9

12. 97-6 Milwaukee Metropolitan Sewerage District Report Summary, <http://www.legis.state.wi.us/lab/97-6summary.html>.

13. *Evaluation of Alternative Technologies for Solids Handling at the Metro [Minneapolis/St. Paul, MN] Plant*, CH2M Hill, January 1998, p. 23.

14. "USDA to Make Fundamental Changes in Proposed Rule on Organic Standards," USDA press release, May 8, 1998.

FOR MORE INFORMATION

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Center web site: <http://www.iatp.org/edrc>

More than 21 million pounds of toxic waste was applied as fertilizer on farms.

<u>Chemical</u>	<u>Pounds Received (1990-1995)</u>
Ammonium Nitrate (solution)	10,823,202
Ammonia	7,135,970
Nitrate Compounds	2,714,204
Zinc and Zinc Compounds	362,108
Phosphoric Acid	361,974
Nitric Acid	129,308
Copper and Copper Compounds	5,151
Sulfuric Acid	2,280
Cobalt and Cobalt Compounds	120

Source: *Environmental Working Group. Compiled from EPA Toxics Release Inventory Data (1990-1995).*