

Plant uptake of PCBs from sludge poses little health hazard

WOOSTER, Ohio — More and more U.S. cities are disposing of municipal waste by applying stabilized sewage sludge on crop and pastureland.

In Ohio, where an estimated 30 percent of all municipal sludge is disposed of through land application, a study has shown that plant uptake of polychlorinated biphenyls (PCBs) is very small. The research indicated little risk of human or animal health hazard from PCB-contaminated sludge materials applied on cropland if published guidelines for application are followed.

Robert H. Miller, research agronomist for the Ohio Agricultural Research and Development Center and Ohio State University, reported results of the Ohio investigation during the annual meeting of the American Society of Agronomy.

Miller said the study was established because of concern that animal and human health could be affected by consumption of feed or grown on soils which had received applications of sewage sludge containing PCBs. Although the carcinogenic PCBs are no longer used in electrical transformers, plastics, and other manufactured goods, the compounds have persisted in the environment in some areas.

There have been no problems of

PCB contamination in municipal sludges produced in Ohio, Miller said. The highest levels of PCBs in any Ohio sludges have been in the range of only 3 to 5 parts per million (ppm). However, Ohio scientists wanted to determine stability of PCB's in the soil and detect any contamination of plants grown on land which had received various levels of PCBs in amended sludge.

Miller reported that any PCB in soil is very stable. The study showed that less than 1 percent of PCBs biodegraded over a 16-week test period. The rate of biodegradation of PCBs in soil was greater without the presence of sludge. Miller reasoned that the PCBs were apparently protected by the organic matter supplied by the sludge.

The study checked two possible mechanisms for plant contamination from sludge containing PCBs—uptake by the plant or leaf contamination from sludge applied when the plants were growing.

Miller reported that three rates of PCB contamination were studied—the lowest approximating the 3-5 ppm level which might occur in Ohio sludges and the highest rate well above any level likely to occur anywhere.

Stabilized sludge was applied to Kentucky 31 fescue, a common forage grass used for pasture and

hay. The studies showed that PCB uptake by the fescue from soil incorporated sewage sludge was so little (less than 1/100th of 1 percent) that it posed no health hazard for animals or humans.

It was a different story when contaminated sludge was surface applied during the growing season. Foliar application of sludge to established growth of fescue showed 350 to 1,000 times greater PCB contamination of the leaves than occurred through root uptake

Even if the sludge particles were washed off the plant (as if by a rainstorm) the level of PCB's remaining on the leaves was still 50 to 100 times greater than would result from root uptake.

To avoid this additional risk, Miller said sewage sludge should be applied to pasture or hay land before any regrowth has started after the crop has been closely grazed or harvested for hay. The Ohio scientist reported that land application of stabilized sewage

sludge to cropland in the Buckeye State has become acceptable and safe because cities are carefully following the guidelines developed by scientists and Extension specialists.

Miller was assisted in the research with PCB-amended sludge by Iraida Robledo, a graduate research associate from Puerto Rico, who was completing the requirements for her M.S. degree from the Ohio State University.

Grain prices require close marketing look

WASHINGTON — Record U.S. feed grain crops and sluggish economic conditions here and abroad are hurting feed grain prices. Here are average farm prices expected this marketing year:

	1981/82	Last year
Corn (\$/bu.)	\$2.55-2.80	3.10
Sorghum	2.35-2.55	2.95
Barley	2.45-2.60	2.91
Oats	1.80-1.90	1.82

With prices this bearish, farmers will want to take special care to choose a marketing strategy that will yield the best possible returns. Also, recent changes in the tax laws should be taken into account.

National average loans rates for 1981 crops are: corn \$2.40 a bushel, sorghum \$2.28; barley \$1.95, and oats \$1.24. Rates for individual counties are likely to differ somewhat from these averages.

Loans are available from the county ASCS office through March 31 for barley and oats and through May 31 for corn and sorghum.

The interest rate is 14.5 percent through January 31. On February 1, the rate on existing loans and on new loans may be adjusted to more accurately reflect costs of borrowing from the U.S. Treasury. Regular price support loans may be repaid any time before maturity.

Regular loans provide immediate cash and allow time to assess the market or to hold grain for feeding later on. You may want to consider investing the cash at today's relatively high rates of interest, or pay off bills and loans.

The interest you would pay on the CCC loan would be a possible deduction on a tax return. Of course, interest earned from money invested may be taxed, but it could be well worth while to put a pencil to the various options and combinations.

Farmers can immediately enter their 1981 corn, sorghum, and barley crops into the farmer-owned reserve. If 1980 crops of

these grains are currently under a regular price support loan, they may be put into the reserve right away too.

Reserve loan rates for 1981 crops are higher than regular loan rates: corn is \$2.55 per bushel; sorghum \$2.42; and barley \$2.07. Farmers placing grain in the reserve receive annual storage payments of 26-1/2 cents a bushel, payable in advance.

Interest on the 3-year reserve loans is 14.5 percent, but interest charges are waived after the first year. As on regular nine-month loans, the interest rate may be adjusted on February 1. Current release levels at which grain may be removed from the reserve without penalty are \$3.15 a bushel for corn, \$3.00 for sorghum and \$2.55 for barley.



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