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TENNESSEE ENVIRONMENTAL REPORT

March, 1982

retirement or vacation homes might be slowed. Citizens were especially concerned about the transportation and storage of large amounts of PCB wastes in their county.

The local government approvals may be premature. Pyrotech, Inc., has not applied to the Tennessee Department of Public Health or to EPA for any of the required preconstruction permits or plans reviews.

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The Grundy County Industrial Board approved the construction of an incinerator designed by Pyrotech Systems, Inc., of Tullahoma (a division of Pyro-Magnetics of Massachusetts) to burn hazardous wastes at high temperatures. The Pyrotech equipment burns PCB's (or PCB-contaminated waste oils) at temperatures of 4,500 degrees F. The high temperatures are maintained long enough to break chemical bonds and destroy the toxic compounds. Pyrotech claims a destruction efficiency of 99.99% for their process.

The equipment is designed to burn 75 to 100 gallons of PCB contaminated fuels per hour. The combustion process is constantly monitored by sensors tied into a computer. The equipment is shut down immediately if a malfunction is detected. Combustion by-products are carbon dioxide, water vapor and a concentrated salt solution. According to a Pyrotech spokesman, the company plans to dump concentrated salt solutions into Nickajack Reservoir.

A full-scale prototype incinerator has been constructed at the U.T. Space Institute at Tullahoma. The incinerator, which is reported to have cost \$2 million, is mounted on a flat-bed trailer. Pyrotech, Inc., proposes to haul the equipment to the Coalmont site and install it permanently there.

Pyrotech, Inc., conducted a test-burn in Tullahoma early in March. TVA provided 16 drums (55 gallons each) of PCB contaminated oils for the test. The demonstration was observed by representatives from EPA, TVA and the Tennessee Department of Public Health. The test-

PCB INCINERATOR FOR GRUNDY COUNTY?

Grundy County bids fair to become the next battle ground in the Tennessee industrial community's ongoing efforts to establish a licensed hazardous waste facility in the state. In an unusual Friday night meeting on February 19, the Grundy County Industrial Board approved construction of a \$3 million hazardous waste incinerator near Coalmont. The Industrial Board's action was ratified by the Grundy County Commission the next day at a special Saturday meeting, by a vote of 9-0, with 1 Commissioner abstaining.

Citizens in Grundy County reacted quickly and angrily to what they viewed as an attempt to bring an unwelcome industry into Grundy County in a clandestine manner. People were angry that the negotiations between Pyrotech officers and members of the Industrial Board had been conducted "behind closed doors"--without public knowledge or debate. The scheduling of a Board meeting at 9 p.m. on a Friday night was viewed as highly suspect and drew harsh criticism.

Citizens expressed alarm about potential threats to their personal health and the health of their families, to property values and to businesses. Some voiced concerns about a loss of tourist business; others were alarmed that the sales of

burn appeared to go as planned, but data from the demonstration is still being analyzed. Final results have not been released.

Ironically, because of the inept handling of its proposal, Pyrotech, Inc., may have made it difficult to build a facility in Grundy County--or anywhere else in Tennessee--for the high temperature destruction of PCB's and similar toxic chemicals. This is particularly unfortunate, as chemists and engineers agree that a high temperature destruction is one of the few environmentally sound methods of disposing of PCB's and their chemical cousins. This is the type of technology which the environmental community should be willing to support, given responsible corporate management and an acceptable site.

ABOUT PCB'S

Polychlorinated biphenyls--PCB's for short--are extraordinary industrial chemicals. They have been manufactured since 1930 by Monsanto Chemical in the United States and licensed for manufacture overseas. PCB's are a family of chemicals; its members differ in specific properties. PCB's, however, share many properties. They are uncommonly stable; they are not inflammable. PCB's conduct and store heat efficiently and are good electric insulators. They are resistant to acids, alkalies and other corrosive reagents. They are not easily biodegraded. PCB's have limited solubility in water or alcohols but dissolve quickly in fats. There are only 3 ways to destroy PCB's: (1) high temperature burning; (2) exposure to ultraviolet light or ozone; and (3) a proprietary detoxification process patented by General Electric.

PCB's are ubiquitous. Their most familiar use is in heavy electrical equipment, such as transformers and capacitors. They are commonly used in air conditioners and refrigerators, in TV sets and in the ballasts of fluorescent light tubes. PCB's are used in paints and primers, in industrial degreasers, soaps and water treatment chemicals, waterproofing compounds, and "carbonless"

carbon paper. In 1978 EPA estimated that 10 million pounds of PCB's escape into the environment every year through accidents--leaks, spills and evaporation.

PCB's are literally everywhere in the world. They have been found in fish and fowl, in deep oceans and at the poles. The compounds accumulate in fat and are concentrated by passage up the food chain. The toxic effects of PCB's were first reported in chemical workers. Employees handling PCB's developed disfiguring skin lesions (chloracne) and complained of numbness, loss of appetite and great fatigue. Later Investigations have tied PCB's to liver disfunction and disease and bone deformation. PCB's seriously impair normal reproduction in rhesus monkeys and other primates; spontaneous abortions, stillbirths, and birth defects are commonly observed. PCB's are carcinogenic in rats and mice.

The most familiar, wide-spread and costly disaster related to PCB's is the contamination of long reaches of the Hudson River by PCB's discharged from a General Electric plant at Hudson Falls, New York. Fish populations--permanent and migratory--contain unacceptable concentrations of PCB's in their tissues. Because the bottom sediments are heavily contaminated, the fish continue to be contaminated, even though discharges ceased several years ago. The fishery has been destroyed.

Monsanto restricted use of PCB's to customers manufacturing "closed cycle" equipment as early as 1971. As evidence of PCB's wide distribution and its threat to public health and the environment, Congress acted. In the Toxic Substances Control Act, adopted in 1976, Congress specifically gave EPA the authority to ban manufacture of PCB and to phase out its use. EPA has been slow to move. Manufacture of PCB was finally banned in 1979, but EPA has not curtailed all existing uses. PCB-containing equipment may be used until it is worn out. In 1980 EPA estimated that there are still 750 million pounds of PCB's in use in the U.S. and that it will probably require at least 20 years to completely phase out equipment now in place.

