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The decade of the 1980s saw tremendous growth in the U.S. solid waste incineration industry. In 1980, the U.S. was burning only 1.8% of its solid waste but by 1990 that number had grown 8-fold to 15.2%.[1,pg.4] Despite this surge of growth, by 1990 the incineration industry was stalled, its future in doubt. Grass-roots anti-incinerator activism had taken hold.

In 1990, 140 incinerators were operating in the U.S. with a total capacity of 92,000 tons per day but a more revealing fact is this one: between 1982 and 1990, 248 incinerator projects (with a combined capacity of 114,000 tons per day) were canceled.[1,pgs.4,215] As the '90s unfolded, prospects for the incineration industry continued to fade as more projects were canceled. Some operating incinerators were prematurely shut down, such as the one at Glen Cove, Long Island, which closed in 1991 after only 8 years of service.[2]

In 1990, U.S. EPA [Environmental Protection Agency] estimated that by the year 2000 the U.S. would be incinerating 26% of its solid waste, but by 1992 EPA had lowered that estimate to 21%.[1,pg.5] Now even that reduced estimate seems overly optimistic. Grass-roots activism at the local level has brought growth in the incinerator industry to a crawl.

The key concern among grass-roots activists is health. Incinerators release carcinogenic (cancer-causing) and toxic chemicals from their smoke stacks, including heavy metals (such as arsenic, lead, cadmium, mercury, chromium and beryllium); acid gases, including hydrogen fluoride;[1,pg.11] partially-burned organic material such as polyvinyl chloride (PVC), herbicide residues, and wood preservatives; other organic chemicals, including polycyclic aromatic hydrocarbons (PAHs); and dioxins and furans.[3] One recent analysis identified 192 volatile organic compounds being emitted by a solid waste incinerator.[4]

Several PAHs and dioxins and furans are known or suspected human carcinogens. Dioxins were named as "known" human carcinogens by the World Health Organization in 1997.[5]

Now a series of reports from around the world have cast even more doubt on the safety of solid waste incineration, further dimming the industry's prospects in the U.S.

Britain

People who live within 7.5 kilometers (4.6 miles) of a municipal solid waste incinerator have an increased likelihood of getting several different cancers, according to a 1996 study of 14 million people living near 72 incinerators in Britain.[6]

The British study was conducted in two stages. In stage 1, 20 incinerators were selected randomly for study. Some 3.3 million people lived within 7.5 km of these incinerators and their cancer history was examined. Statistically significant increases were found for all cancers combined; stomach cancer; cancers of the colon and rectum; liver cancer; cancer of the larynx; lung cancer; bladder cancer; and non-Hodgkin's lymphoma. Among people living within 3 kilometers (2 miles) of an incinerator, cancers of the lymph system and leukemias were significantly elevated, but cancers of the larynx were not.

The second stage of the study examined the cancer history of 11.4 million people living within 7.5 km of any of 52 incinerators. Among these people, there were statistically significant increases in all cancers; stomach cancer; cancer of the colon and rectum; liver cancer; lung cancer; and bladder cancer.

This is the first study to examine the cancer hazards of municipal solid waste incinerators among the general population. The researchers point out that their study cannot demonstrate cause-and-effect because there was no measurement of exposure of the populations living near the incinerators. The authors did take into account confounding factors, such as the effects of poverty ("deprivation" is the term they use), but the relationship between incinerators and cancer remained strong, providing real cause for concern among people who live within 5 miles of a solid waste burner.

France

According to Paul Connett, chemistry professor at St. Lawrence University in Canton, N.Y., three French solid waste incinerators were closed in January of this year because milk from cows on nearby dairy farms was found contaminated with excessive levels of dioxins. Dioxins are a toxic family of unwanted byproducts of incineration.[7]

According to the Guardian (London) September 16, 1997, dioxin was found late last summer in French cheeses and butter at levels exceeding safety standards set by the Council of Europe.

And March 11, 1998, a private organization in France, the National Center for Independent Information on Waste (E-mail: toxoid@club- internet.fr), revealed that a municipal incinerator near Maubeuge in northern France, has contaminated cows' milk at levels of 22 parts per trillion (ppt) in milk fat. Staff members at the National Center say they believe this is the highest dioxin level ever measured in milk in France and they are calling for a moratorium on the construction of new incinerators. France has announced plans to build 100 new solid waste incinerators by the year 2002.[7]

Japan

The NEW YORK TIMES reported April 27, 1997 (pg. 10) that dioxins from trash incinerators have become an important public issue in Japan, which has 1850 operating incinerators. The TIMES says that, in neighborhoods downwind from incinerators, independent scientists have reported infant deaths 40% to 70% higher than average. These claims have not been verified.

Even the U.S. Navy is complaining publicly that the U.S. base at Atsugi is being dangerously contaminated by a nearby garbage incinerator. More than 6600 Americans live within a kilometer (0.6 miles) of the incinerator. Rear Admiral Michael Haskins, the Navy's top commander in Japan, recently wrote Japanese officials saying, "People who reside or work at... Atsugi are breathing the poorest and the worst dioxin- polluted air in Japan" and "suffer damage to their health every day." Admiral Haskins told the INTERNATIONAL HERALD TRIBUNE "The incinerator is my number one priority in Japan."[8]

Japan burns 76% of its municipal solid waste. During the 1980s, proponents of incineration in the U.S. often pointed to Japanese incinerators as clean and safe. For example, in 1987, Allen Herskowitz wrote, "Japanese [incineration] workers spend 6 to 18 months learning how toxic chemicals are stabilized in the furnace and captured in the stack, and they must have an engineering degree and undergo on-site training.... Americans have much to learn from their overseas counterparts about handling solid waste without undue risk to human health."[9] At the time Herskowitz worked for Inform, Inc., a mainstream environmental organization that took the position that incineration could be made tolerably safe. This viewpoint did not prevail. Instead, the grass-roots environmental movement engaged in hand-to-hand combat with hundreds of proposed incinerators, killing 248 of them, thus crippling the U.S. incineration industry.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)

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[1] T. Randall Curlee and others, WASTE-TO-ENERGY IN THE UNITED STATES (Westport, Connecticut: Quorum Books, 1994). ISBN 0-89930-844-9.

[2] John T. McQuiston, "Embattled L.I. Incinerator to Go Way of Shoreham," NEW YORK TIMES March 13, 1996, pg. B6.

[3] Julia G. Brody and Terry Greene, INCINERATION: DECISIONS FOR THE 1990S (Boston, Mass.: Tellus Institute and JSI Center for Environmental Health Studies, 1994). Available from JSI Center for Environmental health Studies, 210 Lincoln St., Boston, MA 02111; telephone (617) 482- 9485.

[4] K. Jay and L. Steiglitz, "Identification and Quantification of Volatile Organic Components in Emissions of Waste Incineration Plants," CHEMOSPHERE Vol. 30, No. 7 (1995), pgs. 1249-1260, identified the following volatile organic chemicals emitted from a solid waste incinerator stack: pentane; trichlorofluoromethane; acetonitrile; acetone; iodomethane; dichloromethane; 2-methyl-2-propanol; 2- methylpentane; chloroform; ethyl acetate; 2,2-dimethyl-3-pentanol; cyclohexane; benzene; 2-methylhexane; 3-methylhexane; 1,3- dimethylcyclopentane; 1,2-dimethylcyclopentane; trichloroethene; heptane; methylcyclohexane; ethylcyclopentane; 2-hexanone; toluene; 1,2-dimethylcyclohexane; 2-methylpropyl acetate; 3-methyleneheptane; paraldehyde; octane; tetrachloroethylene; butanoic acid ethyl ester; butyl acetate; ethylcyclohexane; 2-methyloctane; dimethyldioxane; 2- furanecarboxaldehyde; chlorobenzene; methyl hexanol; trimethylcyclohexane; ethyl benzene; formic acid; xylene; acetic acid; aliphatic carbonyl; ethylmethylcyclohexane; 2-heptanone; 2-butoxyethanol; nonane; isopropyl benzene; propylcyclohexane; dimethyloctane; pentanecarboxylic acid; propyl benzene; benzaldehyde; 5- methyl-2-furane carboxaldehyde; 1-ethyl-2-methylbenzene; 1,3,5- trimethylbenzene; trimethylbenzene; benzonitrile; methylpropylcyclohexane; 2-chlorophenol; 1,2,4-trimethylbenzene; phenol; 1,3-dichlorobenzene; 1,4-dichlorobenzene; decane; hexanecarboxylic acid; 1-ethyl-4-methylbenzene; 2- methylisopropylbenzene; benzyl alcohol; trimethylbenzene; 1-methyl-3- propylbenzene; 2-ethyl-1,4-dimethylbenzene; 2-methylbenzaldehyde; 1- methyl-2-propylbenzene; methyl decane; 4-methylbenzaldehyde; 1-ethyl- 3,5-dimethylbenzene; 1-methyl-(1-pro-penyl)benzene; bromochlorobenzene; 4-methylphenol; benzoic acid methyl ester; 2-chloro-6-methylphenol; ethyldimethylbenzene; undecane; heptanecarboxylic acid; 1- (chloromethyl)-4-methylbenzene; 1,3-diethylbenzene; 1,2,3- trichlorobenzene; 4-methylbenzyl alcohol; ethylhex anoic acid; ethyl benzaldehyde; 2,4-dichlorophenol; 1,2,4-trichlorobenzene; naphthalene; cyclopentasiloxanedecamethyl; methyl acetophenone; ethanol-1-(2-butoxyethoxy); 4-chlorophenol; benzothiazole; benzoic acid; octanoic acid; 2-bromo-4-chlorophenol; 1,2,5-trichlorobenzene; dodecane; bromochlorophenol; 2,4-dichloro-6-methylphenol; dichloromethylphenol; hydroxybenzonitrile; tetrachlorobenzene; methylbenzoic acid; trichlorophenol; 2-(hydroxymethyl) benzoic acid; 2-ethylnaphthalene- 1,2,3,4-tetrahydro; 2,4,6-trichlorophenol; 4-ethylacetophenone; 2,3,5- trichlorophenol; 4-chlorobenzoic acid; 2,3,4-trichlorophenol; 1,2,3,5- tetrachlorobenzene; 1,1'biphenyl (2-ethenyl-naphthalene); 3,4,5- trichlorophenol; chlorobenzoic acid; 2-hydroxy-3,5- dichlorobenzaldehyde; 2-methylbiphenyl; 2-nitrostyrene(2- nitroethenylbenzene); decanecarboxylic acid; hydroxymethoxybenzaldehyde; hydroxychloroacetophenone; ethylbenzoic acid; 2,6-dichloro-4-nitrophenol; sulphonic acid m.w. 192; 4-bromo-2,5- dichlorophenol; 2-ethylbiphenyl; bromodichlorophenol; 1(3H)- isobenzofuranone-5-methyl; dimethylphthalate; 2,6-di-tertiary-butyl-p- benzoquinone; 3,4,6-trichloro-1-methyl-phenol; 2-tertiary-butyl-4- methoxyphenol; 2,2'-dimethylbiphenyl; 2,3'-dimethylbiphenyl; pentachlorobenzene; bibenzyl; 2,4'-dimethylbiphenyl; 1-methyl-2-phenylmethylbenzene; benzoic acid phenyl ester; 2,3,4,6-tetrachlorophenol; tetrachlorobenzofurane; fluorene; phthalic ester; dodecanecarboxylic acid; 3,3'-dimethylbiphenyl; 3,4'-dimethylbiphenyl; hexadecane; benzophenone; tridecanoic acid; hexachlorobenzene; heptadecane; fluorenone; dibenzothiophene; pentachlorophenol; sulphonic acid m.w. 224; phenanthrene; tetradecanecarboxylic acid; octadecane; phthelic ester; tetradecanoic acid isopropyl ester; caffeine; 12-methyltetradecacarboxylic acid; pentadecacarboxylic acid; methylphenanthrene; nonedecane; 9-hexadecene carboxylic acid; anthraquinone; dibutylphthalate; hexadecanoic acid; eicosane; methylhexadecanoic acid; fluoroanthene; pentachlorobiphenyl; heptadecanecarboxylic acid; octadecadienal; pentachlorobiphenyl; aliphatic amide; octadecanecarboxylic acid; hexadecane amide; docosane; hexachlorobiphenyl; benzylbutylphthalate; aliphatic amide; diisooctylphthalate; hexadecanoic acid hexadecyl ester; cholesterol.

[5] International Agency for Research on Cancer. IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISK TO HUMANS: VOLUME 69 POLYCHLORINATED DIBENZO-PARA-DIOXINS AND POLYCHLORINATED DIBENZOFURANS (Lyon, France: International Agency for Research on Cancer, February, 1997).

[6] P. Elliott and others, "Cancer incidence near municipal solid waste incinerators in Great Britain," BRITISH JOURNAL OF CANCER Vol. 73 (1996), pgs. 702-710.

[7] "France: Dioxin contamination from trash incinerators," WASTE NOT #423 (March 1998). WASTE NOT is available monthly from Ellen and Paul Connett, editors, 82 Judson Street, Canton, NY 13617; tel. (315) 379- 9200; E-mail: wastenot@northnet,org. Highly recommended.

[8] Ellen Connett, "Japan: Massive unrest over dioxin contamination from trash incinerators," WASTE NOT #424 (March 1998); see note 7 above. And: Ellen Connett, "Japan --Part 2 of 2," WASTE NOT #425 (March 1998); see note 7 above.

[9] Allen Herskowitz, "Burning Trash: How It Could Work," TECHNOLOGY REVIEW (July 1987), pgs. 26-34.

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