# The Power and The Dust

# Hazardous Waste Incineration In South Carolina Cement Kilns: A Report on the Global Players, the Ecological Impact, and Grassroots Resistance

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# **Background**:

Community Organization for Rights and Empowerment (CORE) leader Virginia Townsend requested that we provide assistance in understanding the impact of a large hazardous waste disposal operation in Southeastern South Carolina •The facilities border on sensitive wetland bordering Dorchester and Orangeburg Counties. Citizens are concerned about the impact of upwards of 5 cement kilns located on a stretch of land along Route 453, between Holly Hill and Harleyville, SC.

The hazardous waste disposal operation being carried out in this region falls under the rubric of "recycling." Chemical wastes are shipped there and used as fuel in cement kilns where the adhesive constituent (aka "clinker") of cement is manufactured. This type of waste disposal is considered recycling because the waste are supposedly being used productively. "Cement kilns," thus exploit a controversial loophole in hazardous waste law, and have become a cheap and largely unregulated disposal option for producers of hazardous waste - a proverbial black hole.

## **Issues Raised:**

Several key issues have become apparent in the course of the research on the situation in Holly Hill and Harleyville.

 The incineration of hazardous waste in cement kilns is not safe releasing toxic

heavy metals, dioxins, furans and other dangerous substances into the air.

 The facilities impact minority neighborhoods between these two towns.

areas.

•The amount of waste shipped to this area for disposal is substantial. Approximately 20% of all TRI waste shipped offsite for disposal in SC is shipped to the facilities in these two towns.

 Safety-Kleen, one of the main companies involved in the delivery of hazardous waste to Holly Hill, has been operating under bankruptcy protection since 2000.

•Giant is the largest burner of hazardous waste in the Holly Hill, Harleyville area. Giant is described as a pioneer in the burning of waste fuel.

•Records indicate that in 1997 alone, upwards of 161,000 tons of hazardous waste may have been burned in Holly Hill and Harleyville to make cement.

•90% of the cement manufactured in Holly Hill and Harleyville probably was used within 300 miles of there in the construction of roads, sidewalks, houses, schools, hospitals











Cement Kiln Incineration of Hazardous Waste and other structures.

•Lafarge burns less hazardous waste than the other two cement operations in the area. They burn tires however, which also release toxic chemicals into the air.

### Structure of this report:

This report begins with an outline of the history

of cement kiln incineration - of how hazardous waste came to be used as waste fuel in cement kiln incinerators. We proceed from there to a discussion of why this issue is controversial and why it is a threat to public health and safety. Next we discuss the main players and the field and then we characterize the operations ongoing in Dorchester and Orangeburg Counties, South Carolina. We conclude with recommendations geared to the community.



#### Activists and Public Interest Groups

American Lung Association Binational Toxics Project of the Texas Center for Policy Studies Blue Ridge Environmental Defense League Chemical Weapons Working Group Common Cause Community Organization For Rights and Empowerment (CORE) Downwinders At Risk Environmental Defense Fund Greenpeace Greenpeace-Mexico Harrison Ford Huron Environmental Activist League (HEAL) Mexican Pesticides and Alternative Action Network National Citizens Alliance (NCA) National Wildlife Federation Network Against The Noth America Free Trade Agreement Sierra Club

### Cement Industry and Other Corporate Players

AIG APO Assiut Cement Blue Circle Industries PLC Boston Consulting Group Canal + Cembureau

Cementos Bio-Bio Cementos Diamante Cementos Portland CEMEX (Cementos Mexicanos) Cemex Joint Venture Ciments Francais Cuvaison Winery Dow Dundee DuPont European Cement Association Fomento de Construcciones y Contratas, S.A. Giant Cement Giant Resource Recovery Heidelberger Holderbank Financiere Holnam (Holcim) Inc. Home Depot Hrvhory Omelchenko Inversiones Samper Keystone Cement Kodak The Koplowitz Family, Madrid LACSA (Sanson) LaFarge Corporation LaFarge-Systech Cement Kiln Lorenzo Zambrano Markus Akermann National Lime Association North Texas Cement Company (aka Gifford-Hill) Portland Valderrivas, S.A. Rizal Santee

Safety Kleen Scancem The Seagram Company Ltd. Semen Gresik Shell Oil Government of Singapore Investment Corporation Solite Corporation Southdown Cement Swatch Texas Industries (TXI) Thomas Schmidheiny Union Bank of Switzerland Universal Studios Universal Music Group Valencia Vencemos Vivendi, S.A. Vivendi Universal World Business Council For Sustainable Development Wolrd Environmental Council



# The Rise of Cement Kiln Incineration of Hazardous Waste

According to Friends of the Earth campaigner Roger Lilley, it was import pressure from countries such as Korea, which forced prices for cement down by 40 per cent during the 1980's, that led the US cement industry to resort to using hazardous waste to reduce their fuel bills. At first, they burned relatively clean liquid or "nurse" fuels — fuel which when combusted released high British thermal units (Btu). However, by the early 1990's, as more and more of these wastes were being burned on-site by the industries which generated them, cement kilns began to maintain their income from waste disposal by taking large amounts of low Btu solids or sludges. Lilley quotes one cement manufacturer in 1987 stating that burning waste was becoming so profitable that: "It's possible that ... cement will be just a by-product of waste burning." The major legal loophole that allowed waste to be burned in cement kilns was the exemption of 'recycled' chemical wastes from the 1984 Resource Conservation and Recovery Act.

Until the drafting of the Resource Conservation and Recovery Act (RCRA) in 1976 by Congress, most hazardous wastes were simply buried. Concerned about dependence on foreign oil (under pressure from environmentalists) Congress sought the recovery of flammable wastes. Industries substituting chemical waste for fuel would be exempt from RCRA's stringent requirements. In 1980, Congress adopted the "Bevill Amendment," pursuant to which an EPA regulation excluded cement kiln dust from the definition of hazardous waste, subjecting it to tailored standards to be developed by the EPA. Following a February 1995 report to Congress, EPA's Regulatory Determination on Cement Kiln Dust promoted additional control in the interest of public health and the prevention of potential environmental damage. Accordingly, a program adapted to local plant conditions would be developed to control the site-specific risks and minimize compliance costs.

Section 3004(q) of the Resource Conservation and Recovery Act (RCRA), enacted as part of the Hazardous and Solid Waste Amendments of 1984, instructs the EPA to regulate facilities burning hazardous waste as fuel. The BIF or "Burning of Hazardous Waste in Boilers and Industrial Furnaces" rules, integrating the mandates of section 3004(q) and the Bevill Amendment, were promulgated to establish air emissions requirements for facilities burning hazardous waste as fuel. Before BIF rule enactment, the burning of hazwaste in cement kilns, was unrestricted, considered "recycling" and thus unregulated. A big loophole.

Cement companies took advantage of interim status permits intended to enable trial burns to take place. Lilley pointed out that "these permits could be issued after just one restricted public hearing and gave no effective time limit to the duration of the trial. By 1990, 24 cement and 17 aggregate (lime) kilns were burning three billion pounds of hazardous waste across the US."

# Grassroots Resistance to Cement Kiln Incineration of Hazardous Waste

Opposition to hazardous waste burning in cement announced its intention to begin burning hazkilns emerged from community groups, local gov- ardous waste as a substitute for natural gas and ernment, the medical profession and operators of commercial hazardous waste incinerators, which are more expensive to operate, largely because they are more stringently regulated than cement kilns. In 1984, when the Lafarge cement plant in Oak Cliff, a Dallas, Texas neighborhood,

coal, Congressman Martin Frost successfully passed a federal law requiring cement plants burning hazardous waste in cities of 500,000 or more residents to be subject to the same health and safety requirements as commercial incinerators. As a result, Lafarge dropped its plans, and Resistance continued page 5

# The Failure of Regulation

In early 1993, the EPA Draft Report on Dioxins fueled the controversy when it identified wasteburning cement kilns as a major source of dioxins. In September 1994, the American Lung Association produced a video ["Smoke and Mirrors"] on Texas cement plants, which was screened despite threatened legal action by the cement industry. Continued campaigning began to pay off when Southdown Cement, the only cement company that had lobbied for greater regulation of waste burning, pulled out of the waste business.

Regulators shifted to examination of the waste dust from cement kilns burning hazardous waste and even the cement itself. In January 1995, the EPA determined that stricter controls should be applied to the disposal of cement kiln dust to prevent pollution of ground and drinking water, and to reduce health risks associated with breathing and ingesting dust from cement kilns. In April 1995, campaigners filed a petition with the EPA calling for all cement manufactured using waste to be labeled as such, but the EPA rejected this.

In 1999, the Sierra Club, in an effort to cut pollution that causes lung diseases and cancer, joined with the National Lime Association in challenging the US EPA's hazardous air pollutant emissions regulations for cement manufacturing. Its goal was to prod the EPA into forcing cement-makers to cut the amount of harmful chemicals being spewed by cement kilns. In filing their lawsuit [*National Lime Association v. EPA*], the Sierra Club stated that: "Although cement kilns are among America's worst polluters, the federal government has done very little to control the pollution they release into our air. Because the ... (EPA) has recently released standards that continue their do-nothing approach, Sierra Club has asked a federal appeals court to force the agency to take action to protect people from the release of mercury and other dangerous chemicals."

"Cement kilns foul our air, land and food. These cement kilns make it tougher for kids with asthma to breathe, fill our lungs with toxic chemicals, and poison the food we eat," said Jane Williams, Vice Chair of Sierra Club's National Waste Committee. Furthermore, Williams stated that: "By completely failing to limit mercury emissions, the EPA's rule for reducing pollution from Portland cement kilns flies in the face of the Clinton Administration's Mercury Action Plan. The

EPA has not lived up to President Clinton's promises to make our air cleaner and safer to breath." "It's long past time for the cement industry to clean up its act," said Ross Vincent, a chemist and chemical engineer, who chairs the Sierra Club's national pollution prevention efforts. "Cement makers have lagged way behind even mediocre performers in the industrial sector in reducing pollution. The EPA's new rules won't do anywhere near enough to bring cement kilns up to the reductions that Congress intended when it passed the Clean Air Act."

In late 2000, the U.S. Court of Appeals [No. 99-1325] rejected the Sierra Club's challenge to the emission standards for hazardous metals and dioxin/furans on a technicality. But it accepted 4



# Failure contd.

the Sierra Club petition on its other two challenges. The Court found that (1) the EPA's failure to set standards for hydrogen chloride, mercury and total hydrocarbons contrary to the Clean Air Act's plain language and (2) directed EPA to consider the health impacts of potentially stricter standards for hazardous metals.s"] on Texas cement plants, which was screened despite threatened legal action by the cement industry. Continued campaigning began to pay off when Southdown Cement, the only cement company that had lobbied for greater regulation of waste burning, pulled out of the waste business in late 1994.

Resistance continued from page 3 eventually sold the plant.

In 1986, the North Texas Cement Company (then called Gifford-Hill) plant began burning hazardous waste in Midlothian, Texas, the heart of the petrochemical country. As it began providing cheap under-regulated toxic chemical disposal to oil and chemical companies, it also gave birth to a formidable grassroots mobilization in the form of Downwinders at Risk.

[www.downwindersatrisk.org]

North Texas Cement, attempted to squelch further public outcry by describing its operations as "resource recovery" instead of hazardous waste incineration. However, according to Downwinders at Risk, however, "[w]hatever its name, the process allowed the 1965 cement plant to get paid to burn the same kinds of wastes as a commercial hazardous waste incinerator without having to apply the health and safety standards of an incinerator."

An engineer for a Midlothian competitor, Texas Industries (TXI), complained to the Texas Air Control Board that "letting an old cement plant burn wastes containing toxic metals like lead was a very dangerous proposition." But soon thereafter, TXI's circa-1960 Midlothian plant began incinerating the same kinds of hazardous waste it Resistance continued page 7

# Percent Minority in Proximity to Four TRI emitters in Orangeburg and Dorchester, SC



# Why is it so Cheap? Pennsylvania Waste Fire Throws Light

A fire at the waste fuel storage tank farm of Keystone Cement, a wholly-owned subsidiary of Giant Cement Holding, Inc., throws light on how greatly cement industry profits have come to depend on burning hazardous wastes as a substitute fuel. Immediately after the December 8, 1997 incident, Keystone ceased using waste fuels and entered a negotiated consent agreement with the Pennsylvania Department Environmental Protection (PADEP) to halt the use of waste fuels plant pending an investigation and determination of appropriate corrective actions to ensure a similar incident did not occur in the future. A report on the findings and recommended corrective actions was submitted to the PADEP on December 31, 1997.

Because Keystone was forced to burn 100% coal for three weeks in December, 1997, Giant later reported that this accident "resulted in lost revenues and additional costs of approximately \$450,000 in the quarter, or \$0.03 per share after tax." In fact, ever since the cost of energy exploded during the 70s as a result of the Middle East oil embargo, burning hazardous wastes has proven, in the words of Giant, to be "an increasingly significant source of revenues in its own right. .... our resource recovery operations continue to significantly add to our profitability."

In the case of Giant, whose subsidiary Keystone pioneered the development of recycling and resource recovery programs in the cement industry, the company is the industry leader in the field of recycling and reuse of waste fuel. The Harleyville, SC-based Giant is one of only two U.S. cement plants permitted to store and utilize bulk solid waste-derived fuels. By the late 90s, it was burning about 160,000 tons of high-BTU waste-derived fuels in place of coal.

According to its own financial filings, "whereas the cement industry averages fuel costs of between \$3.50-\$4.00 per ton of clinker (a key component of cement), in 1997 Giant Cement Holding actually eliminated its fuel cost as a result of our resource recovery business. ... Not only do we burn waste in place of coal to fuel our cement kilns, but we realize additional revenues from our resource recovery operations, as we are paid for providing our waste-derived fuel suppliers a disposal alternative to incineration." With operations in Virginia and North Carolina and a hazardous waste drum processing and fuel blending facility in Alabama, its Solite acquisition brought Giant new capacity and improved on its "already leading-edge resource recovery capabilities."

Further perspective can be gained by looking at cement industry financial results. In the case of

Giant, for instance, its 1999 financial filings reveal the growing significance for the bottom line of disposing of hazardous waste in cement kilns. In 1996, Giant earned 14.5 % [\$14 million] of its total revenues from "resource recovery" [i.e. burning hazardous waste as fuels]; in 1997, despite the fire at Keystone, the figure jumped to 15.7 % [\$15.9 million], and in 1998, fuel substitution accounted for 19.6 % [\$25.3] of revenues. Note that this \$25.3 million figure almost equals the company's total operating 1998 income, which was just shy of \$25.4 million.



#### Resistance continued from page 5

had been warning the Air Control Board about a year earlier.

Like North Texas Cement, TXI dubbed the process "resource recovery." By 1989, tens of thousands of tons of hazardous wastes were being burned at the Midlothian plants of North Texas and TXI where these companies were adding colossal and potentially dangerous on-site tank farms to receive and mix in-coming wastes. Criticism of from within the Agency intensified.

One dissident EPA's Office of Solid Waste engineer Evidence of threats to the health of communities wrote in 1990 that the EPA: "appears to be engaged in a pattern and practice of accommodating the regulated cement kiln hazardous waste dence of sinusitis, asthma, bronchitis and emphyincineration industry with non-existent, or at best loose, regulation." Even without the addition of hazardous wastes as fuel, cement kilns in the U.S. of highly poisonous persistent, bio-accumulative toxins including mercury, carcinogens and particu- response to growing public outcry, A Texas Air late matter, small particles that lodge deep in the lungs and cause respiratory disease."

In 1990, Congress finally moved to amend the Clean Air Act by requiring the EPA to set rules to control the amount of pollution emitted by cement kilns. These new regulations were not nearly as stringent (see sidebars on Pages 3 and 4) as the regulations required of commercial incinerators and did not require a full federal permit. Instead, they created trotted out an old trick called "interim status," which allowed cement plants to operate indefinitely without a full permit. In many cases these "BIF" rules, in the words of Downwinders At Risk, "merely institutionalized the inequities in the status quo."

do nothing to reduce emissions of mercury and failed to adequately limit releases of dioxins and other cancer and disease causing chemicals.

In May 1991, the Fort Collins, Colorado City Council objected to waste burning at Holnam Inc.'s kiln and outlawed the use of cement from waste-burning kilns on any city-funded construction projects. Authorities in Maryland, Montana, Pennsylvania, Alabama, Colorado and Texas passed similar legislation. A major US hardware store, Home Depot, the EPA from communities across the country and informed its suppliers that it would not sell goods containing waste-derived cement.

> and livestock downwind of waste burning cement plants grew as experts observed increased incisema among those living close to such facilities.

In February 1991, Texas Governor Ann Richards were, according to the Sierra Club, " major sources issued a six-month moratorium on new permits to the cement industry to burn hazardous waste, in Control Board (TACB) special investigation committee was set up in the summer of 1992, while in October of that year, the EPA produced a report to Congress showing that cement kiln dust contained not only dioxins but also anthropogenic radioactive elements. Dozens of affidavits presented at a TACB public hearing in November 1992 painted a stark picture of the state of human and animal health downwind of the Texas cement plants burning the hazardous waste

> A broad citizens coalition, including the American Lung Association, local physicians and PTA groups, linked up with every environmental and public health group in the state in a call for reform.

By the EPA's own admissions, the standards set by In January, 1993 the TACB recommended that the EPA allowed cement kilns to continue to emit Texas cement kilns be required to adhere to the tons of highly toxic pollution. Indeed, the rules Resistance continued next page 7

#### Resistance continued from previous page

same emission standards as hazardous waste incinerators. However, the state legislature soon dismantled the Air Control Board and assigned its duties to a newly formed Texas Natural Resource Conservation Commission, which turned a blind eye to the Air Control Board task force's recommendations.

Local cement industry activism however, was to sow the seeds for a broader-based grassroots network which sprung up in August, 1991 with the formation of Huron Environmental Activist League (HEAL) in response to Lafarge Cement's operation of what was effectively one of the eastern US's largest hazardous waste incinerator. The Alpena plant is located on the northeast side of Alpena over a within Alpena, Michigan's city limits and over a permeable karst system on Lake Huron.

Lafarge-Systech Cement Kiln in Alpena burns about 50,000 tons of hazardous waste a year, making the community "virtually a Superfund site because of a thousand tons of toxic, contaminated cement kiln dust. It's the largest off-site hazardous incinerator in Michigan, and the largest cement kiln cement-producing facility in the entire country," according to investigative journalist and activist Liane Clorfene-Casten, wastes in South Carolina ar biggest cement companies belongs to the French-own (now called Holcim) belong Holderbank; and Giant belo owned Cementos Portland. Together these multination large part of the world's ce

HEAL's investigation of the Lafarge facility led to extensive state enforcement action and fines against Lafarge, which had been violating state and federal environmental laws on an ongoing basis. The grassroots action resulted in Lafarge being brought under a Consent Judgement intended to curtail harm to human health and the environment.

Most importantly, through its networking across America, Canada, Mexico, Puerto Rico, and the U.K., HEAL proposed a nation-wide grassroots coalition which came together as the National Citizens Alliance (NCA) in late 1993. NCA became a clearinghouse for information and FOIA'ed sitespecific files that had been used via networking to bring many interim status cement kiln facilities into oversight by state and federal authorities. Furthermore, NCA developed close relationships with the American Lung Association, Environmental Defense Fund, National Wildlife Federation, Chemical Weapons Working Group, Sierra Club, Greenpeace, and other national environmental groups/concerns.

NCA's information archives and primary source documents on the cement and aggregate kiln incineration issue can be accessed through its web site at <u>www.cementkiln.com.</u>

### The World Cement Industry Cartel

The cement companies that burn hazardous wastes in South Carolina are owned by the biggest cement companies in the world. Lafarge belongs to the French-owned Lafarge; Holnam (now called Holcim) belongs to the Swiss-owned Holderbank; and Giant belongs to the Spanishowned Cementos Portland.

Together these multinational companies control a large part of the world's cement production and their dominance continues to grow every year. Their business practices were exposed by a high level inquiry by Brussel-based investigators of the European Union (EU) in the early 1990's.

Beginning in 1989, surprise raids were conducted at the offices of ten of the leading cement producers in Germany, France and Belgium. Evidence obtained revealed a conspiracy to illegally carve up the European market by agreeing on production levels and areas of operation in order to avoid improper competition.

According to the reporting of Canadian journalist

# Private Profits, Public Hazards

All cement production impacts the environment. But according to Cyrus Reed of the Binational Toxics Project of the Texas Center for Policy and Fernando Bejarano Gonzalez of the Mexican Pesticides and Alternative Action Network, writing in Borderlines 36 (Vol. 5, No. 6, June 1997) in response to the threat posed by the fact Cemex and other Mexican cement producers had begun burning massive quantities of hazardous wastes in the name of "energy recycling," they enumerate how the industry's fuel use practices greatly multiply the ecological threat. [See http://www.us-mex.org/borderlines/1997]

Reed and Bejarano say that "the use of hazardous waste as fuel increases these impacts and leads to new environmental problems. First of all, the amounts of sulfur dioxide, nitrogen oxide, particulate matter, and carbon monoxide----contaminants common to all combustion processes, whether cement production or running a car-all increase with the use of hazardous wastes. Secondly, the emissions of toxic components——including heavy metals and certain chemicals ——also increase substantially when hazardous wastes are burned."

"All of these heavy metals and toxics cause significant health impacts, such as genetic damage, cancer, and reproductive effects. Of particular concern are dioxins and furans. In the United States, cement plants that burn hazardous wastes are the third leading source of dioxin and furan production. Dioxins are organic compounds that are persistent (with a half-life of 9 to 15 years in soils), bioaccumulable (they concentrate as they rise in the food chain), and very toxic, particularly to fetuses."

"In addition, both residual cement kiln dust and the intended products (clinker, cement, and concrete) are more likely to be contaminated themselves during the incineration of hazardous wastes. When left unprotected in guarries or municipal landfills, the cement kiln dust infiltrates the environment through aquifers and streams. Cement contaminated with metals or other toxics also has the potential to expose thousands of individuals and construction workers. Finally, the routine use of hazardous waste increases the likelihood of toxic spills either at the cement facility or in transportation, and cement plant workers are exposed to greater risks by working with hazardous wastes."

Cartel continued from previous page

Jock Ferguson in his article "The Sultans of *Cement*," one of the means by which the cartel enforced its market control was through a secret committee called the Cement Task Force. It was "(r)eputedly run by Markus Akermann, a senior Holderbank vice president." Markus Akermann replaced billionaire Thomas Schmidheiny as CEO of Holderbank's cement arm, Holcim Inc. in November 2001. The Cement Task Force allegedly met frequently to monitor a series of "gentlemen's tive weapons." He was told by a French source: agreements" among cement makers in France, Spain, Belgium, Germany, Britain and Switzerland. Furthermore, it was the billions of dollars earned from European construction projects that enabled being charged for cement powder, then his

the five biggest cartel members to gobble up the U.S. cement industry to the point where by 1993 they controlled "about 75% of U.S. cement production. The 85-million-ton-a-year U.S. market is now dominated by Holderbank (a.k.a. Holnam/Holcim), Lafarge, Ciments Francais, Scancem and Blue Circle (now owned by Lafarge)."

Ferguson's investigation for *The Nation* magazine showed that "(f)ear is another of the cartel's effec-"They use real muscle to control their customers. If an independent ready-mix cement maker in Paris complains loudly about the price he is

# CEMEX's "Ring of Grey Gold"

### How Global Economics Drive Cement Kiln Incineration of Hazardous Waste

Question: What global cement giant's success has wide spread implications for global health and ecology? Answer: CEMEX (Cementos Mexicanos)

Despite the alarm raised by Greenpeace-Mexico, the Network Against the North American Free Trade Agreement and other grassroots groups, Mexico's cement producers, led by CEMEX (Cementos Mexicanos), have embraced hazardous waste incineration. By 1997 CEMEX reportedly had either authorizations or test-brun permits in 11 of its 18 plants. Holderbank's Cementos Apasco, Mexico's number two producer, was burning hazardous wastes at all six of its plants. These two industry leaders had allied themselves with US-based waste blending suppliers: CEMEX formed Pro Ambiente with the Texas-based Mobley Environmental Services and Cementos Apasco formed Ecoltec, a joint venture with Waste Management Inc.

CEMEX is a multinational widely admired by business schools, the financial media, bankers and investors. The ingredients of CEMEX's rise to world dominance are closely observed by the other cement giants. For only two companies, the Swiss-based Holderbank [Holcim, Holnam] and the French-based Lafarge, rival CEMEX, which has become the world's third largest cement company and largest cement trader.

This has been accomplished by growing in so-called emerging economies unencumbered by strict environmental regulation. For instance, CEMEX trades with partners in Bangladesh, the Canary Islands, the Caribbean, Egypt, the Ivory Coast, Mauritius, Morocco, Nigeria, Portugal, Singapore, Taiwan and the US. And about 57% of its trading volume of more than 13 million metric tons in 2000 came from third parties, including suppliers from China, Korea, Morocco, Romania, Russia, Thailand, Tunisia, Turkey and Ukraine.

Ironically, CEMEX owes its global position to the fierce resistance it encountered from an American big business culture that honors the principle of free trade more in the breach than in the observance.

In the late 80s, CEMEX's Lorenzo Zambrano, a Stanford business school graduate whose family entered the cement business in the early 20th century near Monterrey, began working with the Boston Consulting Group looking for markets outside Mexico. It was grow and grow fast or be swallowed whole by Holderbank or Lafarge. Neither of which were saddled with CEMEX's astronomical borrowing costs, which reflected Mexico's chronic instability. Following the 1994 Mexican peso devaluation CEMEX's shares plunged along with the entire Mexican Bolsa. The company lost nearly 63 percent of its market value and management was said to have seriously contemplated a name change to divert attention from the growing stigma of being a "Mexican" company. It was crucial, therefore, for CEMEX to establish a base outside its home country.

Since 1975, five US cement industry petitions to block imports from Mexico, Japan, Venezuela and other nations had been rejected, including two by the Reagan administration. But as Zambrano and his advisors began focusing on markets north of the border they unleashed a "no holds barred" turf war. As Common Cause reported Washington's free trade policy on cement imports abruptly changed when [the first] George Bush came to office. "His administration has ruled favorably on all three anti-dumping petitions filed by the domestics. Leading the charge was the nation's third-biggest cement maker, Southdown Inc. of Houston, whose corporate counsel is Bush \$100,000 donor Edgar Marston III." Within two months of a Southdown-led group of U.S. cement manufacturers asked for protection from Mexican imports, the Bush Administration's Commerce Department decided imports were hurting domestic manufacturers. On August 13, 1990, after an investigation and public hearing, the US International Trade Commission (ITC) ruled in a 2 to 1 vote that Mexican cement was being "dumped" – sold at less than fair value – even though it often cost more than domestic cement. The ITC normally consists of a six-member board. However, only four members had been appointed at the time of the ruling and one did not participate in the decision.

CEO & Chairman Zambrano found his company in a surreal situation. As Pankaj Ghemawat observed in a Harvard Business School article ("The Globalization of CEMEX"), CEMEX was, on one hand being charged with artificially deflating prices before the U.S. International Trade Commission (ITC) while the U.S. Federal Trade Commission was investigating it for artificially raising prices. Siding with the U.S.-based companies, the US ITC imposed stiff duties. And when the international GAIT finally ruled in CEMEX's favor in 1992, the U.S. simply refused to reduce the duties.

"By early 1992, responding to petitions spearheaded by Southdown," according to Common Cause, "the Bush administration had virtually driven out cement imports from Mexico, Japan and Venezuela, clearing the way for domestic producers to raise prices. Thus Southdown could tell stockholders last year that it was possible 'to achieve a price increase despite the precipitous drop in cement consumption."

His path blocked by the gringos, Zambrano looked to the world, and especially the Spanish-speaking world where in 1992 CEMEX borrowed its way to control of Valenica and LACSA (Sanson), Spain's largest cement companies. Applying impressive state of the art information technology including global positioning satellite technology that allowed the company to claim that it could deliver cement faster than pizza, CEMEX built up its Spanish profits and succeeded in transferring ownership of its non-Mexican assets to Spain. Future acquisitions were financed through Valencia and with a billion dollar fund set up by the likes of the insurance giant AIG and the investment arm of the Government of Singapore Investment Corporation.

Between 1997 and 1999, CEMEX acquired two Filipino cement makers, Rizal and APO and a minority stake in Semen Gresik, Indonesia's largest cement producer. The Semen Gresik deal involved an agreement to establish a grinding mill to process Indonesian clinker in Bangladesh, one of the world's poorest countries and ranked by Transparency International as the most corrupt nation on earth.

In Latin America, CEMEX acquired new production capacity in Venezuela (Vencemos), Columbia (Cementos Diamante and Inversiones Samper), Chile (Cementos Bio-Bio) as well control of the top cement makers in Panama, the Dominican Republic, Costa Rica and Nicaragua. Additionally, CEMEX gained access to markets in 12 eastern Caribbean nations as well as in the Bahamas, Bermuda, the Cayman islands and Haiti.

In the Middle East, CEMEX added a 77% stake in Assiut Cement in Egypt to complete what the company referred to as its "ring of grey gold." A band of cement plants circling the earth. With CEMEX, now the world's leading cement trader, importing Chinese cement to its west coast terminals in the USA.

The Mexicans then closed the ring, achieving sweet revenge - albeit at

a cost of \$2.6 billion – by outbidding Britain's Blue Circle [now owned by Lafarge] for control of Southdown Inc., the Texas based company that had been its nemesis during the Bush I administration. Today CEMEX operates 13 Portland cement manufacturing plants in Alabama, California, Colorado, Florida, Georgia, Kentucky, Michigan, Ohio, Pennsylvania, Tennessee and Texas, plus an extensive network of cement distribution terminals.

By 1997, Industry Week ranked CEMEX "as the world's third most profitable company in terms of return on sales, with its 29% return outdistancing Microsoft's 25.3% and Intel's 24.7%" [See Joel Podolny and John Roberts, "CEMEX, S.A. de C.V., Global Competition in a Local Business," Graduate School of Business Stanford University, S-IB-17, July 9, 1999]

Some sense of the political intrique that goes hand and glove with wheeling and dealing at the summit of international business was exposed in the Ukraine where the chairman of the parliamentary subcommittee for fighting corruption and organized crime in Ukraine, Volodymyr Nechyporuk, had appealled to the Attorney General demanding that a criminal case be opened against his fellow MP and "antimafia leader," Hryhory Omelchenko for illegitimate interference into the criminal case against officials of the Cemex Joint Venture. Shortly after the case had been dropped, H. Omelchenko had allegedly received two mobile telephones from officials of the Cemex JV, for which user fees for 2 years (of more than in US\$ 7000,) had been paid by the Cemex JV. H. Omelchenko had returned the mobiles to the Cemex JV officials, but only after the investigation against him had been launched. According to Zhytomyrshchyna (15 May 1999), Omelchenko and Anatoly Yermak were simultaneously facing more serious charges of "using their involvement in the Security Service of Ukraine, to illicitly publish information from criminal cases and operative information of security services in order to discredit their political opponents."

What contemporary business world culture applauds as a marvel of modern global corporate strategy depends on an accounting sleight of hand that reaches far beyond the recent Enron and Arthur Andersen type scandal. Ever since the limited liability corporation came into existence centuries ago its fundamental operating rule has been the same. Maximize shareholder value while making sure as many costs as possible never get reflected on the books. More often than not, and especially in the case of corporations that impact on health and the quality of the air, water and environment, workers and surrounding communities end up bearing these off-the-books costs.

Not for nothing that in Europe the limited liability corporation is known as an anonymous society. That's what S.A. stands for in CEMEX S.A. Or for that matter, Lafarge S.A. Or Holderbank S.A.

Furthermore, what raises the risks to humanity as a whole is that highenvironmental impact companies like CEMEX are globe-girdling towers of debt. In the case of CEMEX, by late 1999, its \$ 4.8 billion net debt was, according to Professor Pankaj Ghemawat, "leaving it relatively close to its 55% limit on debt-to-total-capital that was specified in bank covenants." As of April 2002, Standard & Poors described the company as "Mexico's largest corporate debtor," having accumulated \$5.4 billion of debt. Owing so much to big banks and other lenders implies a ruthless attention to short term financial return. In a brutally competitive business where energy costs account for 30 % of delivered costs of cement [so says the Union Bank of Switzerland] this adds up to all the greater an incentive to rationalize burning hazardous wastes in the name of fuel cost reduction and "energy recycling." And what's true for CEMEX is equally true for its global competitors. Such a debt burden will surely play havoc with CEMEX's promotion of itself as an ecologically conscious corporation. The movie star Harrison Ford's fellow Californians may find it hard to understand how he ended up at a glittering banquet conferring on CEMEX a World Environmental Council Gold Medal for International Corporate Environmental Achievement when his Santa Clarita nrighbors are battling a massive sand and gravel mine planned by CEMEX in Soledad Canyon.

The dispute landed in federal court after L.A. County Board of Supervisors found traffic studies performed by the local CEMEX subsidiary's mine proposal did not properly analyze the impact of more than 700 daily truck trips on Soledad Canyon and Aqua Dulce Road, City officials contended the mine would devastate the north Los Angeles County area by "polluting the air, choking area roads and freeways with traffic, and threatening the Santa Clarita Valley's water supply."According to The Daily News of Los Angeles (May 20, 2002), the mine would "clog the Antelope Valley Freeway with gravel trucks, harm the sensitive ecology of the Santa Clara River, pollute the air, damage the local economy and threaten the Santa Clarita Valley's water supply."

A CEMEX US District Court lawsuit accused the supervisors and county officials of having exceeded their authority to impose "reasonable environmental regulation" in order to "favor the interests of local constituents" Company officials argued that because the company signed an agreement with the federal government to mine 56.1 million tons of sand and gravel, county officials could not impose environmental regulations that would change the size and the scope of the mine significantly

What ultimately stands in the path of corporate logic is the fact that the consumers of more than 90% of U.S. cement production [the third leading source toxic dioxins and furans] are within three hundred miles of the plant. Which presents activists considerable potential leverage, including consumer boycotts.

For as Cyrus Reed and Fernando Bejarano remind us: "In the United States, cement kilns burned hazardous wastes for many years until they were required under 1991 regulations to inform communities about this practice. Since then, opposition has been fierce. A national network of 15 local groups has formed the National Citizens Alliance, dedicated to eliminating the practice. Some 15 cement plants have stopped burning hazardous wastes partly in response to this citizen opposition. In Midlothian, Texas, for example, in the early 1990s two cement plants were burning hazardous waste and another was proposing to. Today, only one plant is continuing to burn hazardous wastes while the other two have announced they will not seek a permit to do so." They go on to say that other citizen initiatives have included a petition to require the labeling of all cement produced with hazardous waste--a petition so far denied by the EPA---and consumer pressure on cement distributors to refrain from buying cement produced with hazardous wastes. For several years, for instance, Home Depot has honored this request.



#### Cartel continued from page 9

cement supplier will all of a sudden have a shortage of the particular quality of cement powder he needs. The concrete maker will be unable to deliver his product on time and will lose business. This is how the customers are controlled."

In the US, the European cement giants were able to buy up dozens of ready-mix concrete and aggregate suppliers from Boston to Los Angeles "in an orgy of vertical integration following a 1985 Reagan Administration decision to eliminate antitrust barriers in the cement industry.

This buying spree was well underway by the time the EU antitrust case finally was completed. As British official John Bridgeman, Director-General of Fair Trading, put it: "It took 13 years for us to bring a cement cartel to book." In late 1994, the European commission finally concluded that the EU cement market was dominated by five producers, including Holderbank, Lafarge and the British-based Blue Circle, which is today owned by Lafarge. It also concluded that the cement business was even more concentrated at the national level, with only one producer left in four EU member states, while in other states two or three groups dominated the market. In addition, it found that companies represented in the Cembureau European cement producers lobby were engaging in practices to "establish rules of the game among themselves."

The European Union's legislative and regulatorythe fines imCommission imposed record fines on theLafarge/BluEuropean Cement Association, a cartel of eightsince takenEuropean national cement associations, and on 33Philippines.

cement producers (including Holderbank and Lafarge) for operations between 1982 and 1992 Complaints about the "cement cartel" did not end and spanning 14 countries, more than a decade of with the EU case. The extent of its reach and market sharing and information exchanges involv- power was shown in reports coming out of Asia. ing some \$7 billion in revenue.

European Commissioner Karel Van Miert, who headed the Commission's supervision of mergers and acquisitions, state subsidies and anti-competitive practices, said the fines, along with a Commission mandate for the parties to cease such activities, were justified because "the infringement had gone on for a long time, the cartel was large and affected the bulk of European production, the acts committed were serious and the market was a substantial one." "The producers cannot deny that they were perfectly aware that they were engaging in unlawful activities since, at a meeting of the European group, the chairman stated that needless to say there will be no minutes of this meeting," Van Miert stated. "The producers consistently stressed the specific nature of the market for their products, but such markets are interdependent since they all overlap, particularly in the frontier regions," he said. "Any action on one market can spill over and ultimately spread to the most distant markets. It was thus clearly in order to avoid this 'knock-on' effect that the producers formed a cartel."

The fines amounted to 250 million euros (\$ 301.7 million dollars US). This decision was appealed to the European Court of First Instance, which verified, in March 2000, the existence of an "agreement of non-transshipment," but found inadequate proof of some firms' participation. The number of firms to be fined was reduced to 23 and the amount of the fines to 110 million euros. Four of the 23 firms fined (accounting for 28% of the fines imposed) -- namely, Holderbank, Lafarge/Blue Circle and Heidelberger -- have since taken over the cement industry in the Philippines.

#### Cartel continued from previous page

Indía, Mihir Mistry stated that: "Despite calls for invocation of the Monopolistic and Restrictive Trade Practices Act by the building construction industry and even a self-imposed ban by builders on new purchases for a fortnight did not move the government into action when four cement majors ganged up and raised the price of cement." He asserted that the "government's reluctance to demolish the cement cartel which rigged and raised price per bag of cement" has ensured that hundreds of thousands of people who will rebuild homes destroyed in an earthquake will be forced to spend all or most of what remains with them.

Another article, this one in the August 13, 2001, *Philippine Daily Inquirer*, alleged that the cement cartel composed of Holderbank Financiere Claris, Ltd., Cemex SA, Lafarge SA, and Blue Circle Industries PIc., was dumping Philippine cement abroad but selling the same cement in the Philippines, where it is mined and processed, at much higher prices. "It should be the other way around because the Philippines is the poorest of its customers. But the cartel is selling its cement to well-developed countries like Taiwan and the United States ... and milking the Filipinos to recover their losses."

This then is the nature and legacy of the cement industry players operating hazardous waste disposal facilities in Holly Hill and Harleyville, SC. The companies have a history of predatory and monopolistic practices which do not appear to have been checked by regulatory action. The practice of dumping foreign cement at cut rates into the U.S. market seems to have both hastened their emergence as the dominant players in the U.S. cement market, and driven (at least in part) the collossal growth of hazardous waste disposal in cement kilns as "waste fuel."

### **Details of Cement Operations in SC**

Five cement companies operate in the vicinity of Holly Hill and Harleyville, SC. The three main operators are Giant, Holnam, and Lafarge. Records indicate that Giant, Holnam, and Lafarge appear to be the owners of these five cement plants in Holly Hill and Harleyville. Holnam and two apparent satellite kilns, Dundee and Santee, are in Holly Hill. Lafarge and Giant are in Harleyville. Records indicate that SafetyKleen is the principle conduit for waste shipments to Holnam, while Giant is the largest disposer of hazardous waste

A number of Environmental Protection Agency databases contain information about the amount of waste being shipped to various facilities in South Carolina and the relative burden and risk shared by the residents of those communities. These data indicate that in 1997, over 35% (more than 161,000 tons!) of all hazardous waste shipped for storage, management and disposal in South Carolina appears to have been disposed of in the cement kilns located within approximately two

Details continued next page

Reported TRI Hazardous Waste Shipments to Cement Kiln/Fuel Blending Operationsin Harleyville and Holly Hill, SC: 1987-1999				
Name of Facility	CITY	Number of Recorded Shipments	Chemical Waste Shipments in Pounds	
BLUE CIRCLE CEMENT	HARLEYVILLE	4	10,600	
GIANT CEMENT CO.	HARLEYVILLE	1,431	123,679,935	
DUNDEE CEMENT/SAFETY KLEEN	HOLLY HILL	6	1,957,322	
HOLNAM/SAFETY KLEEN	HOLLY HILL	838	64,720,299	
SANTEE CEMENT/SAFETY KLEEN	HOLLY HILL	17	741,500	
Sum		2,296	191,109,656	

Reported BRS South Carolina Waste Shipment Receipts for 1997				
1997 Hazardous Waste Shipment Recipients (SC only)	Tons Received/Stored and Managed	Percent of Total 1997 Tons		
Laidlaw Hazardous Waste Landfill (Pinewood)	141,839.55	34.32		
Giant Cement (Harleyville)	105,228.57	25.46		
Holnam/Safety Kleen(Holly Hill)	56,079.11	13.57		
Safety Kleen (Lexington)	33,521.34	8.11		
Safety Kleen (Roebuck)	32,931.14	7.97		
Southeastern Chemicals and Solvents (Sumter)	22,466.47	5.44		
Petro Chem (Rock Hill)	21,249.02	5.18		
USAF (Wedgefield)	5.94	.14		
Milliken Chemical (Inman)	1.25	.03		
South Carolina as a Whole (%'s don't reconcile due to rounding)	) 413,322.39	100		

Details continued from previous page

miles of one another in Holly Hill and Harleyville, South Carolina. Additional data indicate that 118 large manufacturing facilities from 31 states shipped a reported just shy of 200 million pounds (100,000 tons) of hazardous chemical waste to these two facilities between 1987 and 1999.

151 chemicals are listed as being shipped to the cement kiln/fuel blending operations in Holly Hill and Harleyville, SC. A number of these chemicals are elemental and therefore not combustible. Metals like lead which accounted for .15% (146.6 tons) of all waste shipped to the area. Lead and other metals, including chromium, nickel, copper, cadmium, and zinc are extremely toxic, especially after being subjected to high temperatures.

Metals in vapor phase are extremely difficult to capture with pollution control equipment and therefore can be expected to escape into the local environment. Other toxic elements in the "fuel"

are antimony, barium, ammonia, bromine, selenium, cobalt, and cumene. Again, these are elements which are not thermally degradable. They can become more toxic when exposed to heat and/or they can catalyze or be captured in myriad uncontrolled chemical reactions between chemicals present during the process of incineration. See Appendix II for a list of chemicals.

There are only three places for toxic residues from the combustion process to go: into the fly ash captured in pollution control equipment, into the air and surrounding neighborhood as emissions, or into the cement product itself.

Geography	Mean Income 1990	% HS Education 1990	% Poverty 1990
US	\$30,056	75.2	13.12
SC	\$36.256	68.3	15.37
Dorchester	\$30,764	76.7	11.54
Orangeburg	\$20,216	62.4	24.93
Holly Hill	\$30,625	69.7	5.8
Harleyville	\$19,125	68.1	21.18

Census 2000 Population Counts of South Carolina, Affect	ed Counties, Municipalities, and Neighborhoods
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Geographic Area	Total Population	White	% White	Black	% Black	Other	% Other
South Carolina	4012012	2695560	67.2	1185216	29.5	131236	3.3
Dorchester County	96413	68498	71	24176	25.1	3739	3.9
Orangeburg County	91582	34045	37.2	55736	60.9	1801	1.9
Holly Hill	1,281	627	48.9	641	50	13	1.1
Harleyville	594	352	59.3	228	38.4	14	2.3
Within 2 Miles of Cement Kilns	2104	875	41.6	1184	56.3	45	2.1
Within 1 Mile of Cement Kilns	1220	608	49.8	591	48.4	21	1.8
Within .5 Miles of Cement Kilns	626	300	47.9	320	51.1	6	1



## Demographic Profile of Holly Hill/HarleyVille

Dorchester and Orangeburg Counties are in the South Eastern part of South Carolina. The towns of Holly Hill and Harleyville are located on the borders of these two counties. These two towns contain population's that are between 40 and 50% minority. The neighborhood around the cement kilns is more than 50% minority. In both county level and neighborhood level analysis, the minority population is predominantly black according to U.S. Census Cement Kiln Incineration of Hazardous Waste 1978 and paid a local geologist \$1.5 million for a sub-surface band of clay near Pinewood, SC. No local environmental regulators, except possibly ones hired by SCA were informed of the company's plan to turn Pinewood into a major waste repository. Pinewood is just to the north of Holly Hill.

SCA began burying solvents, pesticide residues, metal sludges and other hazardous substances from 23 states, Puerto Rico and the Virgin Islands. Other than a

15 foot bed of clay, all that stood between the giant hazardous waste dump and the Black Creek and Tuscaloosa aquifers, the underground water source for the state's Coastal Plan, was a three-sixteenths (3/16thus) inch thick liner. In 1984, WMI, whose greatest mismanagement scandals still laid ahead, joined with the Genstar Corporation, to acquire all the scandal-tainted assets of SCA, Pinewood included. Then in 1989, Laidlaw, North America's third largest waste hauler, in its biggest

Safety-Kleen continued next page

2000 Population of SC, Orangeburg County, Dorchester County, and Areas Proximate to Giant/Lafarge/Holnam Cement Kiln Hazardous Waste Disposal Complex

Demographic Profile

### Mini Profile One- SafetyKleen

Some of the least reliable names in American business have been associated with hazardous waste management in South Carolina. They begin with the Boston-based SCA, a company with one foot in the mobcontrolled waste hauling business of New Jersey and the other in white shoe corporate America. SCA quietly slipped into rural Sumter County in



#### Safety-Klenn continued from previous page

and possibly most regrettable deal ever, acquired all of GSX's assets for \$500 million.

South Carolina's environmental security was now threatened not by the mobster mentality but by the business philosophy shared by all the major corporate waste managers. As Laidlaw's founder, Mike DeGroote had put it, landfills were "oil wells in reverse." But DeGroote, who had played a role in addicting Wall Street to easy short term profits from waste disposal, had always been leery of hazardous wastes. The year before Laidlaw acquired GSX, he cashed out, selling Laidlaw to Canadian Pacific in March 1988 for cash and CP shares. The waste tycoon retired with his loot --valued at \$ 499 million --- to Bermuda. A tax haven.

Political scandal, including federal racketeering charges alleging that Rep. Jack Rogers, South Carolina state speaker pro tempore, had accepted GSX/Laidlaw bribes, further underscored the fact that the current approach to hazardous waste management depended on debased business and political practices, including outright political corruption.

its hands of direct involvement in the business in 1997, though the new owner of Laidlaw's hazardous waste business, Rollins Environmental Services, retained the name Laidlaw Environmental and Laidlaw received a 66.66% controlling interest. Whether this was good news for people near hazardous waste facilities was debatable.

Rollins' board of directors was ranked one of the worst by Business Week, which included it among a group of companies that "tended to fail the tests of independence or accountability." Rollins has been cited for more than 100 violations, both state and federal, but has not paid any penalties. 16

And in 1989, "Rollins was fined \$ 1.9 million for its involvement in illegal shipments of hazardous ash; this year, after running eighteen years on various temporary permits, it received a final operating license."

In April 1998, Laidlaw Environmental paid \$ 2.2 billion, to acquire Safety-Kleen. As North America's largest hazardous waste manager, Safety-Kleen served 400,000 customers in the U.S. and Canada. Besides the Pinewood operation, which was one of seven hazardous waste landfills operated by the company, it had 100 primary and satellite locations in North America; and incineration facilities in Deer Park, TX and Aragonite, Utah as well as in Quebec and Ontario. In August 1999, Laidlaw upped its ownership in Safety-Kleen to 43.6%.

Soon Safety-Kleen and Laidlaw found themselves staggering under a massive debt load, which threw into further doubt their reliability as environmental custodians. For instance, South Carolina law had required Safety Kleen to establish and maintain a fund [the Environmental Impairment Fund] as assurance for potential environmental clean up and restoration of environmental impairment at Pinewood. Safety Kleen was well over The Ontario, Canada-based Laidlaw finally washed \$100 million shy of the total it was obligated to have in this fund. Furthermore, the state ruled that Frontier, the insurance company Safety-Kleen was using to provide for closure costs and third party liability, no longer met its regulatory standards for bond issuers.

> On June 7, 2000, the same day South Carolina declared Frontier wanting, Safety-Kleen sought bankruptcy court protection for it and 73 of its U.S. subsidiaries. The company could not meet payments on more than \$1.6 billion in claims. Among those claimants was the cement maker Holnam, Inc. of Holly Hill, SC to whom it owed \$2,000,000 for burning hazardous wastes. Then Safety-Kleen continued next page

# About TRI and BRS Waste Shipment Data

The Toxic Release Inventory (TRI) is a database of information about releases and transfers of toxic chemicals from manufacturing facilities. Facilities must report their releases of a toxic chemical to TRI if they fulfill four criteria:

1. They must be a manufacturing facility (primary SIC code in 20 -39) or in one of a number of non-manufacutring industries added for the 1998 reporting year:

- 2. They must have the equivalent of 10 full-time workers;
- 3. They must either manufacture or process more than 25,000 lbs of the chemical or use more than 10,000 lbs during the year
- 4. The chemical must be on the TRI list of over 600 specific toxic chemicals or chemical categories.

Therefore, not all, or even most, pollution is reported in TRI.

The Biennial Reporting System (BRS) is one of EPA's primary tools for tracking the generation, shipment, and receipt of hazardous waste. It contains information from the Hazardous Waste Reports that must be filed every two years under the RCRA program. RCRA (the Resource Conservation and Recovery Act) is the Federal statute that regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous waste. Facilities must report their activities involving hazardous waste to BRS if they fulfill one of two criteria:

- \* They are a Large Quantity Generator (LQG) of waste, or
- \* They treated, stored, or disposed (TSD) of RCRA hazardous waste on site in units subject to RCRA permitting requirements.

The definition of Large Quantity Generator is complex, but a simplified version is any site that generates more than 2,200 lbs of RCRA waste in a single month, accumulates more than 2.2 lbs of RCRA acute hazardous waste in any single month, or accumulated more than 220 lbs of spill cleanup material contaminated with RCRA acute hazardous waste in any month.

Not all hazardous waste is reported within BRS. Some waste that might otherwsie be considered hazardous is exempted from regulation within RCRA as part of the original legislation. Some waste treatment units, particular wastewater treatment units, are not regulated under RCRA but instead under other environmental statutes. However, BRS appears to be the best U.S. hazardous waste tracking database available.

Note that RCRA hazardous waste quantities are traditionally reported in tons (2000 pounds). Direct comparison of BRS and TRI waste quantities is difficult since TRI reports on quantities of chemical components while BRS reports on quantities of wastes (which may contain many different hazardous and non-hazardous components). For instance, if 500 pounds of lead dust was spilled onto 3 tons of soil, and this soil was shipped offsite to a landfill, then this would be reported as a transfer of 500 lbs of lead under TRI and as a shipment of 3 tons of lead-contaminated waste under BRS.

Source: www.rtknet.org - > databases -> [TRI and BRS] -> about the data

Safety-Kleen continued from previous page	profiteering, came the inevitable. An avalanche of
Laidlaw itself followed Safety Kleen into Chapter	lawsuits in the form of securities fraud sharehold-
11 after providing its corporate guaranty to satisfy,	er and bond issuer class actions against Safety-
in part, financial assurance for post-closure of	Kleen and Laidlaw. Then Safety-Kleen got more
Pinewood. Insurance coverage was to be substi-	bad news:
tuted for the Laidlaw corporate quaranty.	

Arthur Andersen [which had been fined millions for helping WMI cook its books before doing the same for Enron insiders] became yet another in the cast of dubious corporate characters that make up the sorry saga. Safety-Kleen's Board hired Arthur Andersen to assist a Special Committee investigating the company's past

On September 25, 2000, the SafetyKleen (formerly Laidlaw) lanfill near Pinewood closed. The closure was the direct result of SCELP's victory, on behalf of Sierra Club and Energy Research Foundation, in January, 2000, in the South Carolina Court of Appeals (www.scelp.org/updates.php).

accounting practices. As a result profits and losses When Safety-Kleen and its parent, Laidlaw, filed were restated for 1997, 1998 and 1999. Following for bankruptcy in 2001, it was far more than which, as if in retribution for years of reckless

#### Safety-Kleen continued from previous page

shareholders who were put at risk. So was the environment and the citizens who lived in the vicinity of Safety-Kleen's hazardous waste management facilities like the now closed Pinewood landfill.

The landfill, which never should have been permitted to operate at its site only 1200 feet from Lake Marion, has been described by the South Carolina Department of Health and Environmental Control (DEC) as posing "a much greater degree and duration of risks to the public health and environment than any other facility located within the state (www.scelp.org/updates.php).

### Mini Profile Two: Holnam/Holcim

The July, 2001 issue of Forbes ranks Holderbank and major shareholder Chairman Thomas Schmidheiny, Europe's cement king, as the world's 179th richest person with a fortune of \$2.6 billion. Schmidheiny reportedly likes to play "master of the house at his stately 19th century Grand Hotel Quellenhof in the Rhine Valley." His cement company, based in the small town of Holderbank outside Zurich, today owns some 60% the World Business Council for Sustainable of global cement production. Holderbank's cement empire took off in the early 1950s, when it major polluters as Dow, DuPont and Shell Oil, probought a small Brazilian company, then expanded motes the notion of achieving "eco-efficiency" throughout Latin America to Chile, Colombia, Costa Rica, Mexico, Peru, Venezuela, and finally Argentina.

In Asia, Holderbank avoided Taiwan, Malaysia and Indonesia, where local companies were already strong. Rather, it got into Vietnam in a joint venture with the government and also concentrated efforts Australia and New Zealand. It invaded the U.S. in the early 1950s, building a cement plant in

maxing with the purchase of the old Ideal Basic Industries in the late 1980's. These assets were merged into Holnam, creating the largest U.S. cement company. Holnam also owns St Lawrence Cement, a Canadian company based in Montreal that runs 4 plants on this continent. SLC is owned by Holnam, a North American. Holderbank was renamed Holcim in May 2001.

Through various Swiss entities, Holcim (Holnam) Chairman Thomas Schmidheiny holds approximately 48% of the voting stock of Holderbank, which now, through its subsidiaries and affiliates, ranks as one of the world's largest cement manufacturers. Holcim does business in 60 countries in Europe, North and South America and Asia. Most of Holderbank's billions remain under Schmidheiny family control. Fortune magazine estimates Schmidheiny's wealth at \$2.6 billion, making him the eighth richest person in Switzerland.

Thomas Schmidheiny's younger brother Stephan, whose business involvements include Swatch (a maker of cheap watches), is known for leading a business delegation at the 1992 United Nationssponsored Earth Summit in Rio de Janeiro, Brazil. This led Stephan to form what became known as Development. The Council, which includes such through the harmonizing of capitalistic and environmental goals.

More locally, the Schmidheinys have expressed their interest in nature's bounty through their 1979 investment in Cuvaison wines [www.cuvaison.com] of Calistoga, California. Since 1974, the Schmidheiny family has owned the 573 acre Cuvaison Winery, Thomas Schmidheiny is said to like to tend these 573 acres, 173 of which are on Dundee, Mich., then made several acquisitions, cli- Mt. Veeder. One can assume that so long as they Holnam continued next page

#### Holnam continued from previous page

remain owners of the 400-acre Carneros Estate vineyard producing Chardonnay, Pinot Noir and Merlot, the fabled Napa Valley wine growing region is safeguarded from the threat of giant cement kiln proposals.

Elsewhere, Holnam has proposed building the world's largest cement kiln upwind from St. Louis. The kiln would be almost double the size of any existing kiln in the U.S. The massive Ste. Genevieve County, Missouri operation's only rival in size would be Third World plants in Korea and Thailand.

Even the U.S. EPA and U.S. Fish and Wildlife pump more than 7,000 tons. A figure that many might reasonably conclude flies in the face of oxide (NOx) is a major component of ozone. And by Holnam's own calculations, its giant cement

#### Cement Kiln Incineration of Hazardous Waste

kiln would add over 7,000 tons of the pollutant annually. According to the EPA, long-term ozone exposure, which aggravates respiratory illnesses and fosters respiratory infections, can lead to irreversible changes to lungs and promote chronic respiratory diseases. The Missouri Department of Natural Resources reportedly considers the proposed plant "a potential polluter of the first order."

Company figures reportedly admit that the proposed plant would emit more than 20 hazardous airborne pollutants. Any facility that emits more than 250 tons of NOx annually is rated "a serious risk." By some estimates, Holnam's plant would pump more than 7000 tons. A figure that many might reasonably conclude flies in the face of

Holnam continued next page

# GLOBAL HEALTH THREAT: GREENPEACE CHALLENGES HOLCIM IN LEBANON

In Beirut, on May 23, 2002, the first anniversary of Lebanon's signing the Stockholm Convention for the elimination of Persistent Organic pollutants (POPs), Greenpeace accused that country of ignoring its commitment to eliminate hazardous toxic substances. The controversy highlights the political

challenge posed to government regulators --- be they in the USA or in small countries --- by giant multinationals like HOLCIM and the rest of the cement industry. Greenpeace questioned the Lebanese Ministry of Environment (MoE) credibility as an independent monitor of pollution caused by the local HOLCIM subsidiary since it is relying on data provided by the company itself.

Specifically, Greenpeace is opposed to the Ministry's decision to permit a cement plant in the town of Kefraya to burn tires. "The Director General of the Ministry of Environment, Berj Hatjain's, decision to authorize HOLCIM to start burning waste in their cement kilns goes against the Lebanese

government's international commitment to reduce hazardous POPs from the environment. When granting the permit, the Ministry of Environment also ignored the legal requirement for any Environmental Impact Assessment (EIA) that necessitates the approval of surrounding community before issuing any permit," said Greenpeace campaigner Zeina al-Hajj.

Tires composed of up to 60% synthetic rubber contain chlorinated chemicals such as pentachlorothiphenol and Chloranil will lead to increased dioxin emissions. Yet dioxins and Furans are among the 12 (dirty dozen) POPs listed for immediate phase-out according to the Stockholm Convention. Greenpeace cited a tire-burning test in the Lonestar Davenport Cement plant in the USA, which showed a 36 % increase in dioxin emissions.

Greenpeace is working with the residents and municipality of Koura to ensure that the locals and the workers' health are prioritized over HOLCIM's financial profits. "We are against this proposal. We had enough of dust, smog and poison. Our children are dying. Enough is enough, we cannot take it anymore. We, all the municipalities of Koura are opposing this," said Aouni Al-Samrout, head of the municipality of Kefraya where the HOLCIM plant is located.

For information, please contact: Zeina al-Hajj, Lebanon Campaigner at 03-755100 (mobile) Aline Khoury, Communications Manager at 03- 404402 (mobile) or the Greenpeace office at 01-785665 Email: gp.med@greenpeace.org.lb

#### Holnam continued from previous page

Stephan Schmidheiny's cherished notions of "ecoefficiency."

The main Holly Hill plant, owned by Holnam, is the beneficiary of a relationship between Holnam and Safety-Kleen (see page 15). Safety-Kleen went bankrupt in 1999 and has been operating under bankruptcy protection ever since. diversify beyond Spain and consolidate their pr ence on the Atlantic coast, where Cementos Portland already operated in Maine through its 50% participation in CDN-USA, Inc. Furthermore the Spaniards expected to capitalize on their or

Holnam's two most heavily-fined facilities are reportedly in Dundee (MI) and Holly Hills (SC). In 1999, Michigan fined Holnam Dundee over \$570,000 for emitting more than 75 times their permitted pollution levels, according to EPA records; EPA fined the Holly Hill plant over \$838,000 in 1993 for air quality and waste handling violations, according to the Associated Press.

### Mini Profile Three: Giant Cement

Legal and moral responsibility for the impact of hazardous waste burning operations in South Carolina (and everywhere else where cement is made) is highly diffused through a bewildering web of complex corporate activities. Ownership of the local corporations is distant and limitation of ultimate liability is guaranteed by layer after layer of corporate anonymity. Legal and moral responsibility for the impact of hazardous waste burning operations in South Carolina (and everywhere else where cement is made) is highly diffused through a bewildering web of complex corporate activities. Ownership of ultimate liability is guaranteed by layer after layer of corporate anonymity. Legal services. In turn, PV's principal stockholder was Fomento de Construcciones y Contratas, S.A. ('FCC'). FCC owned approximately 48% of PV's voting equity securities. FCC designs and constructs bridges, roadways and highways, and develops properties including municipal and commercial buildings.

In 1999, the Spanish company Cementos Portland acquired Giant Cement as a means of establishing critical mass in North American. Giant Cement, based in Harleyville, SC, pioneered resource recovery techniques for use in the manufacturing of cement in the late 1970's, making it one of the largest users of waste-derived fuels in the cement industry.

Like its global rivals Lafarge and the Swiss-owned Holcim (Holnam), Cementos Portland expected that increased public spending on highways and

infrastructure, as promoted by the Transportation and Equity Act for the 21st Century (TEA 21), would help keep cement demand high. They also anticipated the merger would enable them to diversify beyond Spain and consolidate their presence on the Atlantic coast, where Cementos Portland already operated in Maine through its 50% participation in CDN-USA, Inc. Furthermore, the Spaniards expected to capitalize on their own experience using waste materials as fuel to reduce costs in the cement manufacturing process.

Cementos Portland's principal offices are in Madrid. Their principal stockholder at the time of the merger with Giant was Portland Valderrivas, S.A., a public company (which appropriately translates as "sociedad anonima" in Spanish or anonymous society in English) organized under the laws of Spain. Portland Valderrivas ("PV") held 575% of the company's voting equity securities. PV also held investments in real estate and financial services.

In turn, PV's principal stockholder was Fomento de Construcciones y Contratas, S.A. ('FCC'). FCC owned approximately 48% of PV's voting equity securities. FCC designs and constructs bridges, roadways and highways, and develops properties including municipal and commercial buildings. Through its subsidiaries FCC also engages in urban and industrial waste treatment and disposal, cement production, urban environmental services, security control systems, marine works, passenger transport and engineering services. FCC's shares trade on the Madrid Stock Exchange.

In turn, B1998 ("B1998"), another Spanish holding company, was FCC's principal stockholder, owning 57% of FCC's voting equity securities. B1998 was 51% owned by the Koplowitz family and 49% by the French multinational company Vivendi, S.A. B1998's principal offices are at Torre Picaso, Plaza Giant continued next page de Pablo Ruiz Picasso 28020, Madrid, Spain.

Vivendi seems almost like a science fiction satire of the modern global corporation. Its controversial hybrid of businesses includes everything from selling water, managing toxic wastes, to making music and movies. The company achieved its status as the planet's biggest water company and a Hollywood player through taking on what has been described as a "crippling debt of \$12.75 billion." This gargantuan mix became known as Vivendi Universal in December, 2000, when Vivendi that facility in that period. In any event, records merged with The Seagram Company Ltd., and France's media company Canal+. This combined Vivendi's telecommunications assets with Seagram's film, television and music holdings (including Universal Studios) and Canal+'s programming and broadcast capacity. Vivendi Universal's subsidiary Universal Music Group is the world's number one music company, with approximately 22% of the global market share in 1999.

Cementos Portland acquired, through Giant's two major subsidiaries, Keystone Cement in Pennsylvania and Giant Cement in South Carolina, the 15th largest producer of cement in the US. Giant's two cement making facilities serve the South-Atlantic and Middle-Atlantic regions. Its subsidiary, Giant Resource Recovery, pioneered in the development "the reuse of waste materials in the manufacturing of cement, making it one of the largest users of waste-derived fuels in the cement industry."

As well, Cementos Portland gained control of the Solite Corporation, which Giant had acquired on April 30, 1998. Solite gave Giant resource recovery operations, five concrete block plants, and a waste treatment and blending facility. As a result of the Solite acquisition, Giant became the largest lightweight aggregate supplier on the East Coast and the largest provider of resource recovery fuel

burning services nationwide, as well as the fourth largest cement producer in its East Coast markets.

## Mini Profile Four: Lafarge Cement

Lafarge Cement's Blue Circle Blant in Harleyville reportedly recieved over 10,000 pounds of chemical waste from TRI reporting facilities between 1987-1997. As we have seen elsewhere, this amount may very well understate the actual amount of hazardous waste Lafarge received at seem to suggest that this facility is burning much less waste than Giant and Holnam

However, this lower level of hazardous waste at the Harleyville Blue Circle Lafarge plant is little cause for rejoice. According to DHEC records, Blue Circle Cement plant operates a waste tire processing facility (Facility ID No. 183342-5201). While we have not been able to determine the amount of tires that the company is taking in, we do know they are being burned.

Lafarge Building Materials, Inc. (Harleyville Plant) operates a dry process cement plant near Harleyville, SC. This process consists of a preheater/percalciner kiln with associated process equipment. Portland and masonry cements are produced and shipped in both bulk and bagged forms from this plant. The primary raw materials used to manufacture cement consist of earthen materials, marl and clay. Marl is mined from a surface mine located behind the plant. Clay is trucked to this facility from other nearby surface mines. Other raw materials are combined with the clay and marl to produce a kiln feed with the appropriate calcium, silica, alumnia and iron composition required for cement manufacture. The kiln feed is progressively heated

LaFarge continued next page

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to approximately 2800oF using a preheater/precalciner and rotary kiln to produce clinker. The clinker is then cooled and ground with a small amount of gypsum to produce portland cement. Masonry cement is produced by combining portland cement with portions of ground marl. Coal is the primary fuel used to heat the kiln. Whole tires, natural gas, fuel oil and various non-regulated wastes serve as secondary fuels.

The Paris-based Lafarge S.A. has expanded from 12 countries to more than 70 since its current chairman and CEO Bertrand Collomb became head of the company in 1989. Today it operates everywhere from Holly Hill, South Carolina, to China, Brazil, Italy, Turkey, India, the Philippines and Poland. According to Hoover's Company Profile Database (World Companies, 2002,) Lafarge is one of the world's largest suppliers of building materials. Its cement division accounts for about 36% of total sales of \$11.5 billion in 2000. Established as a small lime kiln along the Rhone River by Auguste Pavin de Lafarge in 1831, and incorporated in 1919 as Chaux et Ciments du Lafarge et de Teil, Lafarge became a world player in 1864. That year, it participated in building the Suez Canal, one of France's great imperialist era undertakings. During the 1920s, the company began producing portland cement. In 1956, it gained a foothold in the North American cement market, just three years before the Lafarge family withdrew and the company emerged as a publicly held company known in France as Lafarge Coppee S.A.

Lafarge Canada Cement and General Portland were fused under single management during the 1980s into a new US entity, Lafarge Corporation, in Herndon, Virginia, has approximately 900 operawhich the Paris-based Lafarge SA maintains a 52% stake. In 1986, Lafarge Corp bought the

industrial waste processor, Systech Environmental, from National Gypsum, thus joining other cement makers in marrying their production and profits to hazardous waste disposal. According to investigative reporter Jock Ferguson, writing in the March 8, 1993 edition of The Nation, "The Lafarge Corporation ... is reportedly making as much as \$ 1 million a month in the toxics trade at its plant in Alpena, Michigan, where it has E.P.A. approval to push as much as 17 million gallons of chemical wastes through its kiln each year."

In 1995, Lafarge SA was one of the original founders of the World Business Council for Sustainable Development, along with Swiss businessman and banker Stephan Schmidheiny (his brother, Thomas, is the Holderbank-Holnam/Holcim billionaire. The Council includes major polluters such as Dow, DuPont and Shell Oil, and espouses a notion of "eco efficiency," in the interest of "sustainable development," achieved through the harmonization of marketdriven and environmental goals.

Lafarge SA has continued to grow through global acquisitions, notably the \$3.7 billion purchase, in 1997, of Redland PLC, a major UK roofing and aggregate company. In 1999, Lafarge acquired India-based Tisco's cement plants and bought the remaining shares of Lafarge Braas GmbH, the holding company that houses its European roofing operations. Lafarge's 2-part takeover of UKbased Blue Circle Industries (initially acquiring a 23% stake in the company, and subsequently acquiring the 77% of Blue Circle Holdings Inc. for about \$ 3.6 billion) turned it into the world's largest cement maker.

Known as "Lafarge Corporation" until mid-2001, Lafarge North America Inc. (LAF), based in tions in the US and Canada where business is

#### LaFarge continued from previous page

conducted through Lafarge Canada Inc. ("Lafarge North America," Standard & Poor's Corporate Descriptions plus News, April 27, 2002.) In 1989, LAF bought subsidiaries of the Standard Slag Holding Company, Missouri Portland Cement (1991), and Davenport Cement (1991). The company's most publicly visible board member between 1990 and 1992 (date of her resignation,) had been Arkansas lawyer Hillary Rodham Clinton. According to CNN's "Inside Politics," she resigned from three corporate boards (including her \$31,000 per year position with Lafarge,) claiming her husband's campaign kept her from fulfilling her duties as a director.

LAF made new acquisitions in 2000 and 2001, including a Michigan-based quarry operation, 23

#### Cement Kiln Incineration of Hazardous Waste

aggregate operations and 55 asphalt plants in British Columbia, Alberta, Saskatchewan, Ontario and Quebec, thus adding 2 billion tons of aggregate reserves and over 25 million tons of annual sales volume.

In buying 77% of the British-owned Blue Circle Industries (BCI), Lafarge added more than 12 million tons of the annual cement capacity in the US. BCI's U.S. businesses generated revenues of more than \$700 million in 2000. The Blue Circle cement plant in limestone-rich Harleyville, SC has an annual capacity of about 1 million tons of aggregate and employed 126 people in 2000. In 1998, the Dorchester County mill had invested \$48 million in a new kiln and other improvements, increasing production 50%, bringing its annual

# Land Use Patterns Between Harleyville and Holly Hill, SC



Cement Kiln Incineration of Hazardous Waste production capacity to about 760,000 tons (Holnam Inc.'s plant in nearby Holly Hill, a 980,000-tpy, wetprocess operation, was also being "upgraded" to boost its output potential to 2 million tpy.) The Lafarge/Blue Circle Harleyville plant's markets include Charleston, Columbia, and Raleigh-Durham and Charlotte in North Carolina.

According to the March 8, 1993 Nation article, "(e)nvironmental officials were also alarmed to find low levels of plutonium in three cement plants that are near nuclear facilities ..." One of those three facilities was Blue Circle's Harleyville, South Carolina, plant.

Besides the Harleyville operation, Blue Circle assets taken over by Lafarge Corp included four other cement manufacturing plants with a combined capacity of 4.8 million tons of clinker: one in Calera, Alabama, which had undergone a modernization program doubling plant capacity; one in Ravena, New York, leading supplier to the major urban markets of Boston, Hartford, Bridgeport, Connecticut and New York City; one in Atlanta, Georgia, serving Atlanta with downstream concrete businesses; and one in Tulsa, Oklahoma, with primary markets in Tulsa and Oklahoma City.

Selected Lafarge SA subsidiaries include Bejing Chinefarge Cement LLC (52%, China); Blue Circle Industries (UK); Cimento Tupi S.A. (20%, Brazil); Companhia Nacional de Cimento Portland (Brazil); Lafarge Adriasebina (99%, Italy); Lafarge Aslan Cimento (96%, Turkey); Lafarge Asland SA (99%, Spain); Lafarge Ciments (France); Lafarge Corporation (52%, US); Lafarge India Ltd; Lafarge Perlmooser AG (98%, Austria); Lafarge Philippines; Lafarge Polska Spolka Accyja (Poland); Lafarge Zement GmbH (Germany); MATERIS (33%.)

LAF Principal Subsidiaries: Lafarge Canada Inc.,

Montreal, Que.; Lafarge Dakota Inc.; Lafarge Florida Inc.; Mineral Solutions, Inc.; Presque Isle Corporation, Mich.; Redland Genstar Inc., Towson, Md.; Redland Quarries Inc., Hamilton, Ont.; Systech Environmental Corporation, Ohio; Warren Paving & Materials Group Limited; Western Mobile Inc., Denver, Colo (Standard & Poor's Corporate Descriptions plus News, April 27, 2002 Lafarge North America Inc.). US. Hazardous Waste Fuel Burning Cement Kilns (1992) http://gcisolutions.com/HWFN0192.htm

## Sensitive Environments

The land between Holly Hill and Harleyville is divided by a massive wetland called "Four Holes Swamp." Directly to the south of the Holnam plant in Holly Hill is the northern boundary of the swamp. The swamp is approximately 1.7 miles wide and runs east south east towards the Atlantic ocean approximately 50 miles away where it presumably drains. In addition to the massive Four Holes Swamp, the entire region is studded with smaller but, in aggregate, vast interconnected wetland areas. These types of geographic areas harbor vast quantities of plant and animal life and are a source of food and recreation to local residents (see Appendix I).

## **Conclusions and Recomendations:**

The situation in this region of South Carolina suggests that without continued public pressure, it will continue to receive large shipments of hazardous waste for disposal. Recent trends suggest that the waste shipped to this area are increasing. Given that the Pinewood SC hazardous waste landfill (owned by Safety-Kleen) has been closed and the Giant owned Solite operation in NC has also been closed, it is anywone's best guess how much hazardous waste will be diverted to Harleyville and Holly Hill. Cement Kiln Incineration of Hazardous Waste Data on waste shipments are not available for the past two years - the period in which the Pinewood and Solite, NC facility have been closed. We suspect that when those data do become available, the amounts of waste being shipped to Holly Hill and Harleyville cement kilns will have continued to increase. Cement kilns do not and cannot destroy heavy metals present in such hazardous waste. Moreover, cement kilns produce a wide range of emissions which are exacerbated by the presence of contaminants in the fuel.

The strong possibility exists for spills, explosions, fires and other catastrophes which will not be confined to the boundaries of the cement plant properties. In addition, it is entirely possible that cement products leaving these companies production facilities will be contaminated with a wide range of toxic substances.

### We propose the following recommendations:

Identify public agencies within the two county region and beyond (i.e. schools, highway and road departments, libraries, hospitals) that may be in the process of procuring cement products for various uses. Cement consumption reportedly takes place within 300 miles of the location where it is produced. Press public agencies not to buy cement made from hazardous waste, calling attention to the situation in Holly Hill and Harleyville.

Identify and analyze areas where these plant operations may be leaking or spilling into the Four Holes Swamp.

Force reviews of these plants emiisions limits and compliance histories. In addition, press for increased liability insurance coverage for environmental contamination, fire, explosion, and evacuation. If such insurance is unavailable or insufficient, then force the companies to commit to

financing of bonds or certificates of deposit held by the towns.

Identify and contact publically, companies that are shipping hazardous waste to Holly Hills and Harleyville and ask them to stop.

Environmental emmissions analysis and health risk assessments may be advisable but are of less significance in terms of there impact on the operations of these plants.

## Appendix I. Technical Description of Sensitive Wetland Areas Around Harleyville and Holly Hill, SC

PFO1C [P] Palustrine, [FO] Forested, [1] Broad-Leaved Deciduous, [C] Seasonally Flooded

[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics:

- 1. are less than 8 hectares (20 acres);
- 2. do not have an active wave-formed or bedrock shoreline feature;
- 3. have at low water a depth less than 2 meters ( 6.6 feet ) in the deepest part of the basin;
- 4. have a salinity due to ocean-derived salts of less than 0.5 ppt.

All water bodies visible on the aerial photography that are less than 8 hectares (20 acres) in size are considered to be in the Palustrine System unless depth information is available, or unless an active wave-formed or bedrock shoreline feature is visible.

Limits: The Palustrine System is bounded by upland or by any of the other four systems.

Description. The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers.

Class describes the general appearance of the habitat in terms of either the dominant life form of the vegetation or the physiography and composition of the substrate. Life forms (e.g. trees, shrubs, emergents) are used to define classes because they are easily recognizable, do not change distribution rapidly, and have traditionally been used to classify wet-lands.

Other forms of vegetation such as submerged or floating-leaved vascular plants are more difficult to detect. Substrates reflect regional and local variations in geology and the influence of wind, waves, and currents on erosion and deposition of substrate materials.

[FO] Forested - Characterized by woody vegetation that is 6 m tall or taller. All water regimes are included except subtidal.

(1) Broad-leaved Deciduous - No definition given.

Water Regime: Freshwater Non-Tidal areas (L, P, and R systems)

Though not influenced by oceanic tides, nontidal water regimes may be affected by wind or seiches in lakes. Water regimes are defined in terms of the growing season, which we equate to the frost free period. The rest of the year is defined as the dormant season, a time when even extended periods of flooding may have little influence on the development of plant communities.

[C] Seasonally Flooded - Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

Attribute classification definitions derived from: Cowardin, L.M., V. Carter, F. Golet, and E. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. 103 pp.

### Appendix I. (contd.)

PSS1/2A [P] Palustrine, [SS] Scrub-Shrub, [1] Broad-Leaved Deciduous / , [SS] Scrub-Shrub, [2] Needle-Leaved Deciduous, [A] Temporarily Flooded

[P] Palustrine - The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they

exhibit all of the following characteristics:

- 1. are less than 8 hectares (20 acres);
- 2. do not have an active wave-formed or bedrock shoreline feature;
- 3. have at low water a depth less than 2 meters ( 6.6 feet ) in the deepest part of the basin;
- 4. have a salinity due to ocean-derived salts of less than 0.5 ppt.

All water bodies visible on the aerial photography that are less than 8 hectares (20 acres) in size are considered to be in the Palustrine System unless depth information is available, or unless an active wave-formed or bedrock shoreline feature is visible.

Limits: The Palustrine System is bounded by upland or by any of the other four systems.

Description. The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers.

Class describes the general appearance of the habitat in terms of either the dominant life form of the vegetation or the physiography and composition of the substrate. Life forms (e.g. trees, shrubs, emergents) are used to define classes because they are easily recognizable, do not change distribution rapidly, and have traditionally been used to classify wetlands. Other forms of vegetation such as submerged or floating-leaved vascular plants are more difficult to detect. Substrates reflect regional and local variations in geology and the influence of wind, waves, and currents on erosion and deposition of substrate materials.

[SS] Scrub-Shrub - Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions. All water regimes except subtidal are included.

(1) Broad-leaved Deciduous - No definition given.

(2) Needle-leaved Deciduous - This subclass, consisting of wetlands where trees or shrubs are predominantly deciduous and needle-leaved, is represented by young or stunted trees such as tamarack or bald cypress.

Water Regime: Freshwater Non-Tidal areas (L, P, and R systems) Though not influenced by oceanic tides, nontidal water regimes may be affected by wind or seiches in lakes. Water regimes are defined in terms of the growing season, which we equate to the frost free period. The rest of the year is defined as the dormant season, a time when even extended periods of flooding may have little influence on the development of plant communities.

[A] Temporarily Flooded - Surface water is present for brief periods during growing season, but the water table usually lies well below the soil surface. Plants that grow both in uplands and wetlands may be characteristic of this water regime.

Attribute classification definitions derived from: Cowardin, L.M., V. Carter, F. Golet, and E. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. 103 pp.

Cement Kiln Incineration of Hazardous Waste Appendix II: Chemical Wastes Shipped to Harleyville and Holly Hill, SC Cement Kiln/Fuel Blending Operations: 1987-1999 (# = 151)			
Chemical	Number of Shipments	1997 Pounds	
	225	45705942	
METHANOL	183	33179958	
XYI ENE (MIXED ISOMERS)	184	23946025	
	130	23146053	
	21	7628382	
ACETONE	54	7587781	
	114	7547030	
DICHLOROMETHANE	76	6475087	
ETHYLENE GLYCOL	53	5605233	
N-HEXANE	33	3439631	
ETHYLBENZENE	106	3057989	
ANILINE	15	2414741	
	2	2030000	
	41	1888145	
NAPHTHALENE	28	1691220	
N-BUTYL ALCOHOL	73	1415951	
	47	1395687	
	9	1178124	
		1015022	
	0	062902	
	34	810806	
		602915	
	03	602615	
	4	509130	
	17	409733	
ZINC COMPOUNDS	36	445903	
BENZENE	24	405755	
NITROBENZENE	8	311122	
MANGANESE COMPOUNDS	11	298652	
PHENOL	21	274879	
1,4-DIOXANE	12	274562	
ISOPROPYL ALCHOHOL	11	258575	
METHYL METHACRYLATE	12	237648	
LEAD	9	224881	
N-METHYL-2-PYRROLIDONE	17	219709	
METHACRYLONITRILE	1	210149	
TRIETHYLAMINE	12	204152	
TRICHLOROETHYLENE	33	202904	
METHYL TERT-BUTYL ETHER	14	164867	
DI(2-ETHYLHEXYL) PHTHALATE	2	160124	
CUMENE	10	158761	
CHLOROFORM	14	158563	
1,2,4-TRIMETHYLBENZENE	27	158002	
DIBENZOFURAN	1	150301	
DIISOCYANATES	1	150201	
TERT-BUTYL ALCOHOL	14	143312	
PYRIDINE	11	138077	
CRESOL (MIXED ISOMERS)	10	128070	
DICHLOROBENZENE (MIXED ISOMERS)	5	117283	
ETHYLENE OXIDE	1	115909	
COPPER	12	111627	
1,2-DICHLOROBENZENE	8	99596	
	3	97500	
	7	87640	
	3	70045	
	2	71751	
		60222	
	20	00232	
COBALT COMPOUNDS	6	64422	

Appendix II: (Contd)					
Chemical	Number of Shipments	1997 Pounds			
AMMONIA	11	58141			
	2	53183			
	0	52146			
BARIUM COMPOUNDS	25	51834			
PROPIONALDEHYDE	1	49179			
1,1,2,2-TETRACHLOROETHANE	3	48968			
CYCLOHEXANOL	4	48636			
CARBON TETRACHLORIDE	6	46461			
CREOSOTE	8	46014			
FREON 113	7	43693			
SULFURIC ACID	2	42274			
DIBUTYL PHTHALATE	4	40125			
ETHYLIDENE DICHLORIDE	3	32601			
TRICHLOROFLUOROMETHANE	7	30502			
2-ETHOXYETHANOL	8	28320			
FORMIC ACID	6	27619			
1,3-PHENYLENEDIAMINE	4	27221			
PRONAMIDE	1	26029			
CHROMIUM COMPOUNDS	28	25684			
HYDROCHLORIC ACID	1	25624			
ACRYLAMIDE	3	25604			
CHLOROBENZENE	13	23247			
1,1,2-TRICHLOROETHANE	4	22223			
ANTIMONY COMPOUNDS	9	22133			
NITRIC ACID	3	21817			
CUMENE HYDROPEROXIDE	2	21696			
1,2,4-TRICHLOROBENZENE	1	21500			
HEXACHLOROCYCLOPENTADIENE	1	19132			
BARIUM	5	18911			
ACRYLONITRILE	1	18847			
DIMETHYL PHTHALATE	3	18765			
1,1,1,2-TETRACHLOROETHANE	1	18306			
BROMINE	1	18040			
1,4-DICHLOROBENZENE	5	17027			
DIMETHYLAMINE	1	16647			
DIEPOXYBUTANE	1	16526			
MALEIC ANHYDRIDE	5	16053			
PENTACHLOROETHANE	1	14980			
ISOBUTYRALDEHYDE	5	14903			
ALLYL ALCOHOL	3	14623			
CHLOROMETHANE	1	14177			
2-METHOXYETHANOL	3	13733			
DICYCLOPENTADIENE	1	11865			
METHYL ACRYLATE	8	11601			
LINDANE	1	11212			

Appendix II: (Contd)		
Chemical	Number of Shipments	1997 Pounds
	4	9925
1 2-DICHI OROFTHYI ENE	1	9142
	6	8924
	 1	7144
M-CRESOL	4	6147
BIPHENYI	5	5656
	5	5451
	3	5240
NICKEI	8	4544
	2	4003
1 2-DICHI OROFTHANE	3	3580
	1	3452
	1	2864
	2	2743
	3	2665
	1	2340
	1	2348
	1	22990
	4	1650
	12	1504
	2 9	1/33
	0	1400
	1	
	2	804
	1	762
	1	750
		733
	1	566
	1	550
	1	551
	2	525
	2	525
		422
	2	378
	2	373
	3	203
	3	273
	1	250
		230
	2	214
		212
		129
	1	91
	1	91
		40
		12
	2	
T,Z-DIBROWUETHANE	1	1

# Appendix III - Chemical Releases or Waste Generation

	Companies	Percentile	1999	1995	1988
Total environmental	HOLNAM	70-80	83,425	92,020	38,878
releases:	GIANT	70-80	109,485		
	BCC				
Air releases:	HOLNAM	60-70	37,025	4,520	1320
	GIANT	70-80	109,485		
	BCC				
Land releases:	HOLNAM	50-60	46,400	87,5000	38,746
	GIANT				
	BCC				
Total off-site trans-	HOLNAM	70-80	221,110	22,150	0
fers:	GIANT	30-40	18,276		
	BCC				
Total production-	HOLNAM	90-100	38,884,595	14,048,260	n/a
related waste:	GIANT	90-100	103,978,129		
	BCC				

## Cement Kiln Incineration of Hazardous Waste Appendix IV: Releases Weighted by Potential Environmental Health Impacts

1999	Company	Percentile
Ozone depleting potential:	HOLNAM	10-20
	GIANT	
	BCC	
Cancer risk score (air and water releases):	HOLNAM	70-80
	GIANT	
	BCC	
Non-Cancer Risk Score	HOLNAM	90-100
	GIANT	
	BCC	

1999	Company	Percentile
Air releases of recognized carcino-	HOLNAM	20-30
gens:	GIANT	40-50
	BCC	
Air releases of recognized develop-	HOLNAM	20-30
mental toxicants:	GIANT	70-80
	BCC	
Air releases of recognized repro-	HOLNAM	20-30
ductive toxicants:	GIANT	
	BCC	

# Appendix V - Criteria Air Pollutants

1999 Emissions	Companies	Percentile	Industrial Processes, In- process Fuel Use	Industrial Processes, Mineral Products	All sources
Carbon Monoxide emis- sions:	HOLNAM	50-60	0.49	67.49	67.98
	GIANT	40-50	0	44.77	44.77
	BCC	90-100		5,553	
Nitrogen Oxides emissions:	HOLNAM	90-100	2.39	4,162	4,164
	GIANT	90-100	0	2,761	2,761
	BCC	90-100		2,906	
PM-2.5 emissions:	HOLNAM	30-40	0	17.16	17.16
	GIANT	40-50	0	33	33
	BCC	60-70		65.95	
PM-10 emissions:	HOLNAM	40-50	0	34.25	34.25
	GIANT	60-70	0	69.05	69.05
	BCC	70-80		154.20	
Sulfur Dioxide emissions:	HOLNAM	90-100	0.01	4,166	4,166
	GIANT	80-90	0.08	3,059	3,059
	BCC	80-90		1,286	
Volatile Organic Compound emissions:	HOLNAM	0-10	0.13	0	0.13
	GIANT	0	0	0	0
	BCC	0-10		7.66	
Nitrogen Oxides emissions, ozone season daily average:	HOLNAM	60-70			
	GIANT	50-60			
	BCC	50-60			
Volatile Organic Compound emissions, ozone season daily average:	HOLNAM				
	GIANT				
	BCC	0-10			