MINUTES

MONTANA SENATE
53rd LEGISLATURE - REGULAR SESSION

COMMITTEE ON NATURAL RESOURCES

Call to Order: By Chair Bianchi, on January 25, 1993, at 1:02 p.m.

ROLL CALL

Members Present:

Sen. Don Bianchi, Chair (D)
Sen. Cecil Weeding, Vice Chair (D)
Sen. Sue Bartlett (D)
Sen. Steve Doherty (D)
Sen. Lorents Grosfield (R)
Sen. Bob Hockett (D)
Sen. Tom Keating (R)
Sen. Ed Kennedy (D)
Sen. Bernie Swift (R)
Sen. Chuck Swysgood (R)
Sen. Henry McClernan (D)
Sen. Larry Tveit (R)
Sen. Jeff Weldon (D)

Members Excused: None.

Members Absent: None.

Staff Present: Paul Sihler, Environmental Quality Council
Leanne Kurtz, Committee Secretary

Please Note: These are summary minutes. Testimony and discussion are paraphrased and condensed.

Committee Business Summary:

Hearing: SB 158
Executive Action: None.

HEARING ON SB 158

Opening Statement by Sponsor:

Sen. Rea, SD 38, stated Montanans Against Toxic Burning (MATB) requested introduction of SB 158. He discussed proposed amendments to SB 158 (Exhibit #1). Jerome Anderson, lobbyist for Holnam Inc., asked for a copy of the amendments.

Proponents' Testimony:

Doug Mavor, a general contractor from Bozeman, said he and his six employees work with cement building custom homes. He said he is concerned about what goes into and what eventually comes out of cement. Mr. Mavor distributed information which supplemented his testimony (Exhibit #2). Mr. Mavor stressed that studies have not been done which have proven the safety of hazardous waste cement. He referred to one study which notes: "Clinical studies examining the direct effects of a cement production facility burning either conventional fuel or hazardous waste on the health of the public have not been performed in this country." He discussed another study which examined the health effects of cement toxins on people who mix cement. Mr. Mavor noted the study is based on individuals who mix substantially less cement than he and his workers mix each year. He said he and his workers get covered with cement, and breathe vapors and dust every day. He also expressed concern for his clients. Mr. Mavor concluded that EPA "is not convinced that hazardous waste is safe, yet they are under enormous industry pressure to keep the cement and cement products exempt from the hazardous waste laws."

Dr. Mary O'Brien, environmental studies professor at the University of Montana, distributed an outline of her presentation (Exhibit #3).

Betty Grizzle, environmental engineering teacher, Montana State University, discussed consumption levels and cancer risks with regard to 2,3,7,8 TCDD (a dioxin). She referred to EPA's testing standards. She said EPA has tested four cement kilns out of the 27 that are burning hazardous waste.

David Golden is an insurance agent for Farmers Insurance Group, specializing in commercial insurance. He said testimony has shown that "cement produced with toxic fuels contains more toxic substances than conventionally produced cement." He said he believes that information will affect the "conservative, always running scared insurance companies of America." He said he assumed the large cement companies are self-insured, but discussed a possible insurance effect on retailers and users of cement products. Mr. Golden said commercial underwriters at Farmers Insurance Group have told him the following is likely: an exclusion for product liability coverage on all existing policies where the insured is using cement; a complete moratorium on writing liability insurance on these businesses; a moratorium on writing workers compensation coverage for businesses where workers are exposed to dioxins and other toxic chemicals "which can be inhaled or absorbed through the skin while handling toxic cement." Mr. Golden mentioned the potential problem of pollution liability when concrete used in municipal buildings and water mains begins to degrade. Mr. Golden said long-term costs to the state associated with treating sick workers, cleaning up toxic waste, and defending itself against lawsuits outweigh any short-term operational costs the cement companies may incur.

Brian McNitt, representing the Montana Environmental Information Center (MEIC), submitted written testimony (Exhibit #4). He said MEIC strongly supports SB 158 with the amendments Sen. Rea discussed.

Brady Wiseman, representing Montanans Against Toxic Burning (MATB), referred to the map showing cement kilns actively burning hazardous waste (Exhibit #5A). He noted the nearest competitors (companies that burn hazardous waste) to the Montana cement companies are in Nebraska and Southern California. He said there are better ways to deal with Montana's hazardous waste, referring to "Beyond the Rush to Burn," a report he distributed which describes alternatives (Exhibit #5).

Rachel Raûe Sirs submitted written testimony (Exhibit #1B), but did not speak to the Committee.

Opponents' Testimony:

Jerome Anderson, representing Holnam Inc., said the proposed amendments do not make the bill any more acceptable, as labeling itself would create an embargo on the use and sale of the product. He said he believes the bill is an "unconstitutional impediment on interstate commerce", and added the real purpose of the bill is to shut down operation of Holnam's Trident plant.

Mr. Anderson submitted the written testimony of William Springman (Exhibit #6A), who did not appear before the Committee.

Stuart Weiss, Holnam senior process engineer, submitted written testimony (Exhibit #6), stressing that chemicals do not escape when cement is ground up and mixed with water. He said metals in cement do not escape because they become part of the product in kilns.

Gary Sauer, Vice President, Holnam Western Sales Division, submitted written testimony (Exhibit #7). He added the United States cement industry has become second-rate compared to the European and Mexican industries.

Tom Daubert, representing Ash Grove Cement, said he believes most of the information presented by the proponents to SB 158 was "twisted", "distorted" and based on fear appeal. He said research on which proponents have based their testimony is ongoing, and the EPA has insisted that conclusions cannot be drawn form the current data. Mr. Daubert referred to an EPA internal memo which critiques "Rachel's Hazardous Waste News", a study distributed by MATB. He quoted from an EPA report stating: "There is no significant difference in contaminant concentrations between dust or clinker generated at facilities burning hazardous waste versus those not burning hazardous wastes." Mr. Daubert alleged most of the reports cited in fact sheets distributed by MATB and MEIC are specific to hazardous waste incinerators, not

cement kilns. He added that cement making operations do not produce fly ash. Mr. Daubert said SB 158 "asks you to ignore the existence of your own state health department."

John Fitzpatrick, director of community and governmental affairs for Pegasus Gold Corporation, said his company purchases large quantities of cement. He said Pegasus Gold is unhappy with what it believes are hysterical tactics, misrepresentative of the facts. He discussed the permit process, noting it is time consuming and costly. Mr. Fitzpatrick said proponents' testimony has been too general and has "skirted over the facts." He discussed leaching and lead content of certain materials (Exhibits #8 & #9).

Edward Handl, chemical engineer and representative for Special Resource Management (SRM) expressed opposition to SB 158. SRM is a Montana company specializing in environmental cleanups, hazardous waste transport and disposal, and environmental consulting. Mr. Handl said SB 158 would have an adverse effect on a "proper and benign method of hazardous waste disposal." He said SRM sends hazardous wastes to kilns outside Montana for disposal. Mr. Handl added the facilities that use the wastes are subject to strict emission monitoring as well as product testing standards. He said SRM believes opposition to use of hazardous waste fuels in cement kilns is "counter to good environmental stewardship." Mr. Handl called the proposed warning label speculative, inappropriate, and designed to frighten consumers.

Nancy Griffin, representing the Montana Building Industry Association, said labeling is a bad idea, as it invites work place liability. Ms. Griffin submitted written testimony (Exhibit #10).

Peggy Trenk, representing the Western Environmental Trade Association, distributed written testimony (Exhibit #11) expressing the organization's opposition to SB 158.

Carl Schweitzer, representing the Montana Contractors Association, expressed his organization's opposition to SB 158. He distributed a letter (Exhibit #12) and an article (Exhibit #13) from members of the association.

David Owen, Montana Chamber of Commerce, said he opposes SB 158.

Ed Maronick, president of Helena Sand and Gravel, noted he lives next to the Ash Grove plant. He said he opposes SB 158.

Jerome Anderson distributed the following reports to the Committee: "An Analysis of Selected Trace Metals in Cement and Kiln Dust" (Exhibit #14); "Characterization of U.S. Cement Kiln Dust" (Exhibit #15); and "Evaluation of Acceptable Levels of Trace Elements in Portland Cement" (Exhibit #16).

Questions From Committee Members and Responses:

Sen. McClernen asked if David Golden's testimony was on behalf of himself or the Farmers Insurance Group. Mr. Golden had left, but Brady Wiseman said Mr. Golden was speaking for himself.

Sen. Doherty asked who declares material to be hazardous, what the possibility is that the cement could be declared hazardous, and what the probability is that the site burning cement could be declared a superfund site.

Roger Thorvilson, Department of Health and Environmental Sciences (DHES), explained how hazardous wastes are defined. Richard Knatterud, DHES, said EPA is currently studying the status of clinker. He said clinker is not a hazardous waste, but declined to elaborate further, as studies are ongoing.

Sen. Swysgood asked Mr. Sauer what effect passage of SB 158 would have on operations at Holnam's Trident plant. Mr. Sauer said the plant would not shut down, but added no industry can continue to sustain long-term losses.

Chair Bianchi asked how much cement is sold in bags to private individuals as opposed to bulk sale. Mr. Sauer said about 5% to 6% is sold in bags, and the remainder in bulk. He said he believes the bill would require labeling either way.

Sen. Swift asked Brady Wiseman if the information in "Rachel's Hazardous Waste News" was final and conclusive. Mr. Wiseman said information referred to in the report has been collected, and the "article adequately summarizes the results of the sampling efforts." He continued EPA is evaluating the numbers and a conclusion is forthcoming.

Sen. Doherty asked Mr. Sauer if a good marketing strategy might be to label the cement with an announcement stating the company is proud of the fact that it does not use hazardous waste in the cement making process. Mr. Sauer replied that burning hazardous waste in the kilns is a solution to an environmental problem, and to do as Sen. Doherty suggests would undermine the company's credibility. He added the company is also interested in reducing its manufacturing costs to help it compete with other cement plants.

Sen. Hockett asked how many other plants are required to label the cement. Mr. Sauer said he does not believe there are any, noting cement plants burn hazardous waste in 16 states. Mr. Sauer said Holnam is "interested in being profitable", so the company must control its costs and generate the highest possible revenue.

Sen. Swysgood asked Mr. Wiseman if there was any proof that cement made from hazardous waste causes severe health problems. Mr. Wiseman replied data does not show that the process is safe.

Chair Bianchi asked Mr. Mavor how he proposed to have cement companies prove their product is safe. Mr. Mavor said preliminary EPA reports indicated in 50% of the kilns burning hazardous waste, dioxins were in excess of the legal limits. He said those plants should be shut down. Chair Bianchi asked Mr. Thorvilson if DHES would have the authority to shut down plants found to be emitting dioxins. Mr. Thorvilson said DHES is able to revoke permits or shut down operations.

Sen. Weldon asked Dr. O'Brien if erosion of cement water pipes is equivalent to leaching. Dr. O'Brien discussed "leachability" of metals and organic chlorines from packed cement. She said industry tests show that metals leach, and the companies are not dealing with the possibility of contaminants in dust. Dr. O'Brien noted she was told non-hazardous waste burning kilns are not monitored for the fuel they burn. She said dioxins and pesticides have been found in non-hazardous waste burning plants, so kilns must be burning chlorinated compounds. Ms. O'Brien said EPA has results that 2,3,7,8 TCDD (dioxin) has been found in dust and clinker from hazardous waste burning cement kilns. She added EPA's risk assessment for this dioxin has not been finalized.

Sen. Tveit asked Mr. Sauer how many plants currently burn hazardous waste. Mr. Sauer estimated 25, and added there has been misinformation presented about the function of regulatory agencies. He said DHES knows exactly what is burned in Montana's cement kilns. Mr. Sauer described testing required during the manufacture of cement.

Closing by Sponsor:

Sen. Rea said conflicting data had been presented by parties on both sides of the issue. He added data should be based on what is known, not on conjecture. Sen. Rea stressed SB 158 is simply a way of letting people know what they are buying, and does not place severe restrictions on the cement companies. Sen. Rea concluded that precautions need to be taken to protect public health without hurting industry.

ADJOURNMENT

Adjournment: 2:55 p.m.

Don Bianchi
SEN. DON BIANCHI, Chair

Leanne Kurtz
LEANNE KURTZ, Secretary

DB/lk

ROLL CALL

SENATE COMMITTEE Natural Resources DATE 1/25

NAME	PRESENT	ABSENT	EXCUSED
Sen. Bianchi	X		
Sen. Hockett			X
Sen. Bartlett	X		
Sen. Doherty	X		
Sen. Grosfield	X		
Sen. Keating	X		
Sen. Kennedy	X		
Sen. McClernan	X		
Sen. Swift	X		
Sen. Swysgood	X		
Sen. Treit	X		
Sen. Weeding	X		
Sen. Weldon	X		

FC8

Attach to each day's minutes

Amendments to Senate Bill No. 158
First Reading Copy

Requested by Senator Rea
For the Committee on Natural Resources

Prepared by Paul Sihler
January 25, 1993

1. Title, lines 4 through 7.
Strike: "PROHIBITING" on line 4 through ";" on line 7
Following: "OF" on line 7
Strike: "SUCH"

2. Title, line 8.
Following: "CEMENT"
Insert: "THAT CONTAINS OR IS PRODUCED THROUGH A PROCESS THAT BURNS HAZARDOUS WASTE"

3. Page 2, lines 12 and 13.
Strike: "Definitions" on line 12
Insert: "Definition"
Following: "["
Strike: "sections"
Insert: "section"
Following: "2"
Strike: "and 3"
Strike: "definitions apply"
Insert: "definition applies"

4. Page 2, line 14.
Strike: "(1)"

5. Page 2, lines 16 through 18.
Strike: subsection (2) in its entirety

6. Page 2, line 19 through page 3, line 2.
Strike: section (2) in its entirety
Renumber: subsequent sections

SENATE NATURAL RESOURCES
EXHIBIT NO. 1
DATE 1/25
BILL NO. 158

WRITTEN TESTIMONY
SB 158 - CLEAN CEMENT LEGISLATION

RACHAEL RAUE SIRS

January 25, 1993

Mr. Chairman, Members of the Committee, my name is Rachael Raue Sirs. My husband, I, and our four children live in Saddle Mountain Estates, near the Montana City area in a house we had built two years ago. We took extra precautions when building and had a radon detection device installed during building. We knew some areas of Montana have radon problems, and we took that precaution.

When hazardous waste is burned in cement kilns, the product, ends up containing hazardous residues such as heavy metals and the most toxic dioxin known, 2,3,7,8-TCDD. According to the EPA, "most wastes will not be chemically bound and could be subject to leaching." Cement cures for about 10 years and then degrades. We cannot be guaranteed that the hazardous residues will not leach out.

We most likely will build another new house. I would want to know, and have the right to know, if the cement to be used in construction of my home was going to come from a kiln that burned hazardous waste. I would not use cement from a kiln that burned hazardous waste. That is just one more precaution I would take. Also, the school my children attend is filled almost to capacity. Within the next five to eight years, an addition or new school will have to be built. The school has the right to know if the cement used in construction came from a kiln that burned hazardous waste. **The public has the right to know.** We have the right to protect our health.

Please support the Clean Cement Legislation - SB 158. Thank-you.

Rachael Raue Sirs

SENATE NATURAL RESOURCES
EXHIBIT NO. 1B
DATE 1/25

TOXIC CEMENT AND THE EPA

The EPA allowed cement kilns to begin burning hazardous waste in cement kilns over 10 years ago. Currently, 27 cement kilns and various aggregate kilns across the US are burning over 3 billion pounds of toxic waste a year.

During this10 years, the EPA had not tested cement for toxic contamination from the hazardous waste. After much public pressure, the EPA finally tested cement from 15 cement kilns across the nation in the spring of 1992. The EPA's preliminary report, released Nov. 12, 1992, shows that:

100% of the kilns tested had cement that exceeded risk screening criteria for arsenic;
80% " " " " " " " " " " " " " " " " " " lead;
50% " " " " " " " " " " " " " " " " " " dioxins. 1.

(Dioxins are so toxic than there is no safe exposure level for humans.)

For more than 10 years, cement products have been exempt from the scrutiny of the hazardous waste law (RCRA) because the EPA considered cement to be a "product" and not a "waste". Currently, hazardous waste cement is sold to the public without any regulation or health testing. Also, hazardous waste cement kiln dust (a by-product of cement manufacturing) is sold to farmers as a soil treatment without any warning of the possible toxic content.

This may soon change. In a recent response to the release of the 1992 EPA tests showing excessive toxic metals and dioxins in cement products, Robert Allen, the Acting Associate Director of RCRA , briefed other EPA divisions that:

> **"we believe that immediate action is warranted both to ensure protection of human health and the environment..."** 2

Allen recommends that the EPA require all cement kilns be tested for dioxins in their cement immediately.

The EPA has made many other statements during the past 10 years that question the safety of waste-derived cement products:

> **1985: "most wastes will not be chemically bound (by cement) and are subject to leaching."** 3
>
> **1990: " given the plans of some cement companies to feed solid hazardous wastes with high metals levels into cement kilns, we are becoming increasingly concerned about the potential for the carry-over of toxic constituents to waste - derived products" (ie. cement and cement kiln dust).** 4
>
> **1990: further regulatory inaction by the EPA will "allow millions of pounds of hazardous waste residuals to be distributed into the environment or contained in the cement from the kilns acting as hazardous waste incinerators. How many miles of cement drinking water mains produced from these cement kilns will have to be dug up in the future when the toxic metals and other hazardous waste residues in the cement leach into water supplies? How much taxpayer money will have to be expended to remediate this problem, a problem which could be easily and cheaply prevented?"** 5

Note: Price Brothers Co. of Dayton Ohio, the nations largest manufacturer of concrete water pipe announced in May 1991 that they would no longer purchase cement from companies who burn hazardous waste.

compiled by: Doug Mavor, Bozeman MT (406)-585-3711

1. "OSW Office Director Briefing on Cement Kiln Dust Risk Screening" EPA Office of Solid Waste, November 24, 1992
2. "Dioxins in Cement Kiln Dust" , Robert Allen, Acting Associate Director, EPA Office of RCRA, 1992
3. EPA Handbook; EP 7.8: W28/2: October, 1985
4. Robert Holloway, Combustion Section Chief, EPA Office of Solid Waste letter to the Cement Kiln Recycling Coalition dated March 5, 1990
5. Hugh Kauffman, EPA Office of Solid Waste, Dec 7, 1990

OUTLINE OF TESTIMONY ON SB 158 (Clean Cement Legislation)
Before the Senate Natural Resources Committee
25 January 1993

Mary H. O'Brien, Ph.D.
University of Montana

The problem with cement kilns is "Toxics in, Toxics out."

The more halogenated organic compounds (e.g., chlorinated organic compounds such as chlorinated pesticides, chlorinated solvents, and PCBs) a cement kiln burns, and the more rare, toxic metals a cement kiln burns, the more the cement kiln will distribute toxic chemicals and unidentified organic chemicals and toxic metals into the environment through:

Toxic fugitive emissions **Toxic stack emissions**

Toxic fly ash **Toxic effluent**

Toxic cement

The following are claims that are often made by the cement kiln industry:

1. **Cement kilns that burn hazardous wastes are highly regulated through the Boiler and Industrial Furnaces regulations and therefore are good-neighbor incinerators.**

If cement kilns were regulated as thoroughly as hazardous waste incinerators, they would not be the cheap depository of hazardous wastes that they are for hazardous waste producers.

2. **Cement kilns "effectively manage" metal-bearing wastes by "immobilizing" the metals in cement clinker and capturing others in collection devices along with the cement kiln dust.**[1]

a. Because metallic pollutants are not destroyed by fire, cement kilns merely redistribute all the metals into the air, fly ash, collection device effluents, and cement.

b. Metals are able to leach from cement clinker and dust.

A December 7, 1990 memorandum by long-time EPA hazardous waste specialist, Hugh Kaufman, stated that any cement made at a toxics-burning cement plant could be eventually labeled hazardous and he speculated about how many miles of cement water pipes might then have to be replaced.[2]

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[1]See, e.g., Southdown, Inc. Undated. Cement kilns: an essential component of hazardous waste management.

SENATE NATURAL RESOURCES
EXHIBIT NO. 3
DATE 1/25
BILL NO. 158

(Printed on chlorine-free paper)

c. Probably the most inevitable release of the metals into the environment comes through clinker and cement becoming dust.

Clinker is ground to a powder when made into cement, and that powder is everywhere in a cement plant. Drinking water pipes will eventually erode. School buildings will erode. Cement structures will be torn down. Cement is not forever, but elements like mercury and cadmium are.

3. Cement kilns destroy 99.99 percent or more of organic compounds in the hazardous wastes they burn.

Cement kilns do not completely destroy organic compounds. Some that are destroyed in the heat are re-formed in cooler parts of the stack or outside. Some are incompletely destroyed, forming "products of incomplete combustion" that may be even more toxic than the original compound, but most of which have not even yet been identified, let alone tested for what damage they cause. And some (e.g., 2,3,7,8-TCDD or dioxin) are produced in the kiln by burning chlorine molecules in the presence of organic compounds.

The EPA has recently admitted that state-of-the-art hazardous waste incinerators cannot meet EPA legal requirements for 99.99% destruction of organic compounds or the legally required 99.9999% destruction of dioxins and PCBs.[3] Cement kilns cannot, either.

4. The amount of toxics that cement kilns release into the air or water or land do not present a significant risk to people or the environment. It is not possible to have a completely risk-free world.

It is not a matter of tiny amounts of cement kiln toxics. It is a matter of the cumulative impact of these toxics combined with other toxics to which Montana residents and workers and wildlife are exposed, and which they are carrying in their bodies from past exposures.

Because of the recognition of the accumulation in human adults and infants, birds, and other organisms of long-lasting, toxic, chlorinated compounds such as PCBs, dioxins, furans, and of metals such as mercury, the Canadian and U.S. International Joint Commission on the Great Lakes has recently recommended that:[4]

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[2]Kaufman, Hugh, Office of Solid Waste, U.S. Environmental Protection Agency. December 7, 1990. Potential impropriety in the development of the boiler and industrial furnace (BIF) rules to be promulgated this month. Memorandum to William Reilly, Chief Administrator, EPA. Cited in Texans United. 1992. Citizen's briefing book on cement kiln incineration of hazardous wastes in Texas. Prepared for the Texas Air Control Board's Policy Task Force on Cement Kiln Incineration of Hazardous Waste.

[3]Lowrance, Sylvia (Director, Office of Solid Waste, EPA). September 22, 1992. Assuring protective operation of incinerators burning dioxin-listed wastes. Memorandum to Waste Management Division Directors, Regions I-X.

> Incineration facilities should be phased out of use, or required to eliminate the production and emission of dioxins, furans, PCBs, and inorganic materials, especially mercury and hydrochloric acid...

It is no longer possible to pretend that "just a little more" dioxin or lead or mercury or furan or benzene will be ok.

5. There are no good alternatives to incineration of hazardous wastes, and cement kilns do a service by helping with that incineration.

Alternatives to incineration of hazardous wastes:

a. Toxics use reduction.

It is difficult to respect a state that requires its citizens and workers to bear exposure to cement kiln incineration pollution and toxic cement when it does not require its industry to halve its use of toxics and phase out its generation of hazardous waste.

b. Waste exchange and recycling.

Chromium waste of one company might be used by another to make stainless steel. This would be an example of waste exchange.

If a company recycles its wastes, as a pulp mill is capable of doing as long as it does not use any chlorine compounds to bleach its pulp, then it discharges no wastes.

c. Require waste producers to retain their wastes above ground until they have found a way to handle them without discharging them into the environment.

This will provide facilities with incentives to reduce their use of toxics, exchange and recycle wastes, and develop non-polluting treatment technologies for remaining wastes.

Note: A copy of the documented text (12 pp.) that accompanies this outline is available upon request from Montanans Against Toxic Burning.

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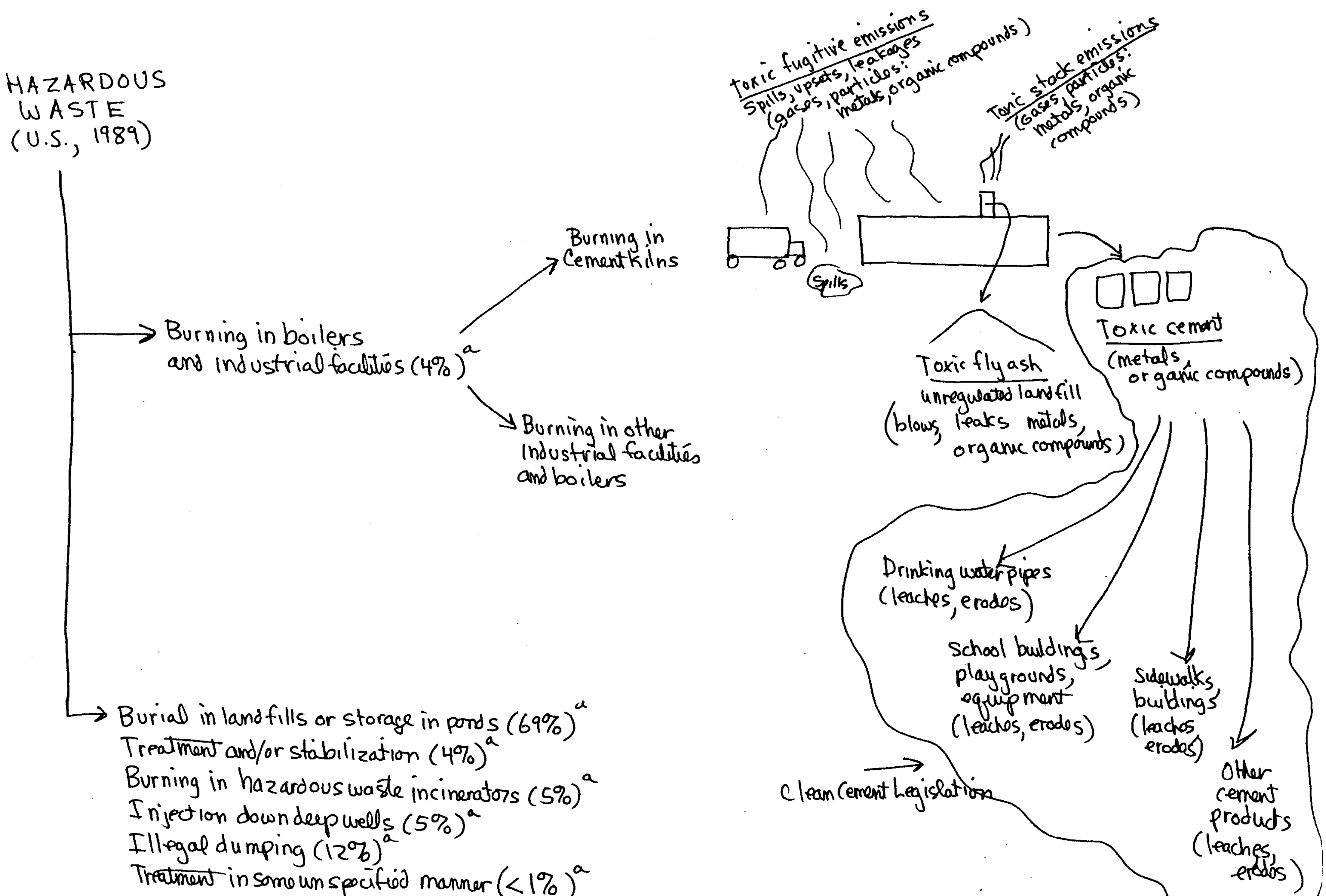
[4]International Joint Commission on the Great Lakes. February 1992. Air quality in the Detroit-Windsor/Port Huron-Sarnia Region. Windsor, Ontario.



[a] Source: Hanson, David. 1989. "Hazardous Waste Management: Planning to Avoid Future Problems." Chemical and Engineering News 67(31):9–18.

MEIC

MONTANA ENVIRONMENTAL INFORMATION CENTER

Senate Bill 158
Testimony by Brian McNitt
representing
Montana Environmental Information Center

MEIC strongly supports passage of Senate Bill 158.

More than ~~30~~ 40 cement kilns in the U.S. are burning over 2 billion pounds of hazardous waste each year. The kilns burn the waste in the same chamber where the cement is made. Residual chemicals from the incineration process -- unburned toxic wastes, heavy metals, and newly-formed chemicals like dioxins and furans -- are potentially contained in the cement product.

The widespread use of waste-produced cement poses a potential threat to the general public, construction workers, and the environment. Toxic materials are may escape from the cement during grinding, mixing, construction, use, and demolition.

As you have already heard, the EPA has only begun to investigate the potential dangers of cement produced using hazardous waste.

The National Sanitary Foundation, the private firm that conducts voluntary safety testing for the pipe industry, does not test for the many contaminants that result from hazardous waste incineration. The Foundation, which tests only for those chemicals that cement and pipe manufacturers disclose as ingredients, reports that not a single cement company in the U.S. has disclosed its use of hazardous waste in cement production.

In a presentation that you heard last week by the cement kiln representatives it was stated that cement is the second most consumed material on the planet (second only to water). Because cement is used so commonly, MEIC believes that is it critical that consumers be able to make an informed choice about whether or not they want to use cement produced with hazardous waste.

MEIC believes strongly that people have the right to know what they are buying and using. We encourage you to require that cement produced with hazardous waste be labeled as such so that citizens may be able to choose to protect themselves.

SENATE NATURAL RESOURCES
EXHIBIT NO. 4
DATE 1/25
BILL NO. SB 158

Thank you.

Brian McNitt

P.O. Box 1184 Helena, MT 59624 (406) 443-2520

Natural Resources Committee Hearing
on
CLEAN CEMENT LEGISLATION - SB 158
January 25, 1993

INTRODUCTION

Sen. Jack Rea
Three Forks

Senate Bill 158

CEMENT

Doug Mavor
General Contractor
Bozeman

TOXIC CEMENT AND THE EPA
Cement and Kiln Dust are currently exempt from EPA regulation
Toxicity Studies have not been done

HEALTH

Mary O'Brien
Ph.D Botany
U. of M.
Missoula

Metals are not destroyed : lead, arsenic, etc.
Toxic organics are not destroyed: dioxin, benzene, etc.
Metals and organics leach out of cement
Threat to Public Health
Threat to Environment

SCIENCE

Betty Grizzle
Civil Engineering Dept.
MSU

EPA finds dioxins in cement dust, 1992
Cancer risk assessment

LIABILITY

David Goldan
Farmers Insurance
Amsterdam

MT may be liable if using haz waste cement in state funded projects
Public Health liability
Property Damage: replace cement buildings & roads in future
Environmental Liability: Cleanup

RIGHT TO KNOW

Brady Wiseman
Computer Consultant
Bozeman

The Warning Label
Are Legislators shirking duty to the public if Right to Know not upheld?
Why does industry oppose Right to Know?

ECONOMICS

Brady Wiseman

Will it cost more?
Will jobs be lost?
Nearest haz waste cement competitors are in Calif. or Nebr.
Better ways to deal with Montana's hazardous waste

SUMMARY

Sen. Jack Rea

SB 158 will protect Montana's Cement industry
SB 158 will protect Montana Govt. from liability
SB 158 will protect Montana's Citizens
SB 158 will protect Montana's Environment
SB 158 will protect Montana

SENATE NATURAL RESOURCES
EXHIBIT NO. 5A
DATE 1/25
BILL NO SB 158

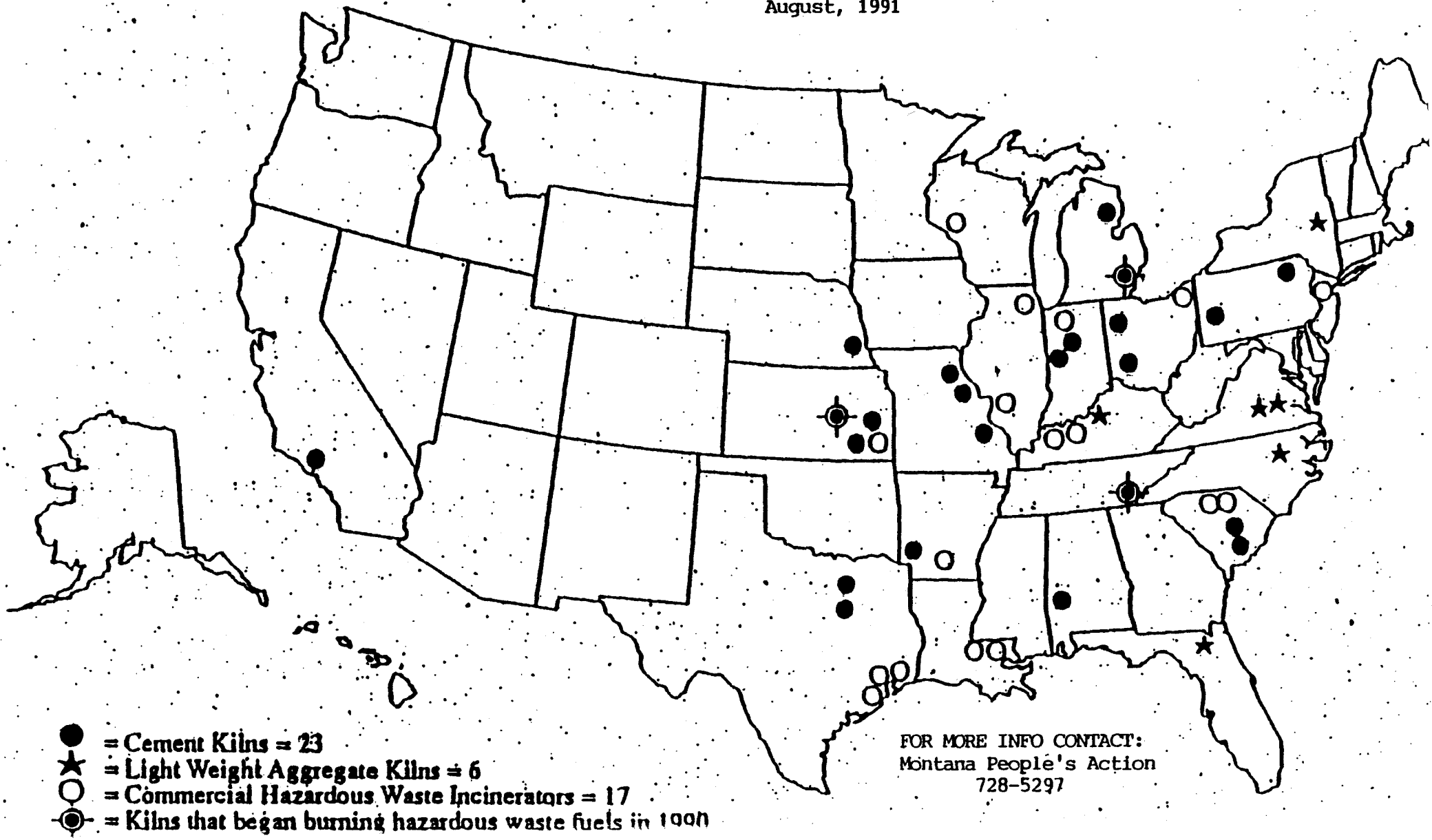
- Cement kilns are now the hazardous waste incinerator of choice for industry. In 1990 they burned 9[illegible]00 tons compared to just 200,000 tons incinerated by commercial hazardous waste incinerators.

- Contrary to the cement industry's claims, cement kilns are less-regulated than commercial hazardous waste incinerators ([illegible]).

- Look at the map below. Where do you think the hazardous wastes generated in the west, northwest, and western Canada will go if cement kilns in Montana are allowed to incinerate hazardous wastes?

Location of Kilns Using Hazardous Waste Fuel and Commercial Hazardous Waste Incinerators

From the Environmental Information Digest
August, 1991



Received
1/25/92

Beyond the Rush to Burn

Alternatives to Hazardous Waste Incineration

A National Toxics Campaign Fund Report

February 1992

National Toxics Campaign Fund
1168 Commonwealth Avenue
Boston, Massachusetts 02134
(617)232-0327

By Robert Ginsburg, Ph.D.

Edited by Sanford Lewis, Erica Perlow and Dave Wood

Design and Production by Michael Stein

SENATE NATURAL RESOURCES
EXHIBIT NO. 5
DATE 1/25
BILL NO. SB 156

CONTENTS

INTRODUCTION

With the wide recognition of limitations associated with the land disposal of hazardous wastes, industry and EPA officials have now shifted their support to another problematic waste "disposal" technology: incineration. In fact, these officials now assert that there is a dire shortage of hazardous waste incinerators and are pressuring the states to site and issue permits for new waste burners. This report will show that the alleged incinerator "shortage" is actually an unsubstantiated argument that undercuts other more preferable waste management alternatives of waste reduction, toxics use reduction, and alternative treatment technologies. In opting for incineration, EPA continues to ignore the harsh facts about the failures of incineration, and community and scientific concerns about safety.

Over 7 billion pounds of hazardous waste is burned annually in the United States, and that amount is increasing by about 20 percent each year. There are at least 25 current proposals for new commercial hazardous waste incinerators, and at least 20 cement kilns are seeking permission to burn hazardous waste. These are in addition to the 17 existing commercial incinerators, which accept waste from any generator, and approximately 30 cement or aggregate kilns currently accepting hazardous waste commercially. If approved, these proposals would result in a doubling of commercial incineration capacity nationwide.

The chemical industry has indicated that incineration is their preference for managing hazardous wastes at individual facilities. A recent study estimated that the market for commercial hazardous waste incineration services could be worth $4.2 billion by 1995 if present trends continue. Incineration has clearly replaced the burial of wastes in landfills as the management preference for regulators and industry.

Incineration is attractive to EPA and industry because it provides a single method of "managing" a large number of very different wastes. Administratively this is similar to the

approach used with landfills. With the equivalent of "one-stop shopping" for hazardous waste, there is less need for detailed analyses of the specific wastes generated by a facility to determine the best, safest and most economical management options. Such analyses would also have to consider the option of not generating the waste. Incineration provides an additional "benefit" to industry as a waste disposal technology by greatly reducing generator liability risks for waste under federal and state superfund laws. Incinerator emissions and ash disposal cannot be easily traced back to the generator of the wastes.

Of the four principal types of hazardous waste burners (including rotary kiln incinerators; liquid injection incinerators, cement kilns and industrial boilers) NONE provides a truly safe solution to the problem of hazardous waste disposal. Even the best "state of the art" incinerators, when functioning effectively, will only destroy part of the waste they attempt to burn. As they operate, they continuously release significant quantities of hazardous wastes as air pollution emissions from their stacks. Other hazardous materials are deposited in the ash. Even "state of the art" incinerators are prone to fugitive emissions, breakdowns and accidents in operation and in materials transportation. All of these disperse greater amounts of toxics into the environment.

Until recently, federal regulations allowed cement kilns and industrial boilers--facilities not even designed for hazardous wastes--to receive nearly 50 percent of the hazardous wastes burned in the U.S., despite the lack of stringent pollution controls or government oversight. Recent EPA regulations have partially closed these loopholes, but have not halted the burning of hazardous waste as fuel, or required the same level of oversight and monitoring EPA required for incinerators.

Mounting evidence in community after community has illustrated the hazards associated with incineration. Yet EPA and industry officials assert that there is a dire shortage of incineration capacity. They are pressuring the states to site and permit new waste burners. Waste burning remains attractive to government and industry because an incinerator may receive simultaneously a wide variety of waste it can "dispose of" quickly.

As EPA, state officials and industry promote incineration, citizens call for waste reduction (WR), toxics use reduction (TUR), and other waste management alternatives. Unlike the simplicity of incineration, TUR and WR require a more detailed and systematic analysis of materials, processes and the waste stream. Citizens recognize that only WR and TUR can put the country on the path to a safe and sustainable approach to dealing with waste. Incineration merely transforms dangerous waste from one form to another, from a liquid or solid to a gas which is then emitted into the air we breathe, the water we drink, the food we eat, and the communities in which our children play. Citizens also realize that the more opportunities industry has to cheaply dispose of hazardous waste, the less incentive there is to reduce.

Toxic Use Reduction and Waste Reduction: The Best Alternatives to Incineration

The best solutions to the nation's hazardous waste problem are policies such as TUR and WR, which phase out the need for waste treatment technologies. Unlike incineration, these reduction approaches are not a generic "one stop solution" to hazardous waste. Instead, they represent a comprehensive program which uses mandatory audits and plans to analyze and strategize how toxics use reduction can be implemented in specific processes and waste streams. Certain substances would be banned or phased out. Such an approach provides the maximum feasible protection for public health and the environment, since it identifies fundamental alternatives to the creation and handling of wastes. In other reports, including From Poison to Prevention[1] the National Toxics Campaign Fund has discussed at length the need for these approaches to be used as the first line of recourse against hazardous wastes. Generating less waste, rather than building new incinerators or creating new and different types of landfills, is the most safe, productive and cost-effective approach to problems of hazardous wastes and other toxic releases. A nationwide campaign to reduce hazardous wastes, and to reduce the use of toxic

[1] From Poison to Prevention, National Toxics Campaign Fund, Boston, MA., August 17, 1989

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chemicals, would be far more environmentally desirable than the current EPA/industry efforts to promote incineration.

Could Nationwide Toxic Use Reduction Efforts Eliminate the Need for Incineration and Other Alternative Treatment Technologies?

While federal law, entitled the Resource Conservation and Recovery Act(RCRA) has designated waste reduction as a top priority for resolving the hazardous waste problems, neither the EPA nor most states has taken up the call and moved aggressively to require industries to implement reduction strategies. Instead, their emphasis remains on siting or expanding waste disposal facilities. For instance, the EPA has used the Capacity Assurance Planning process established under Superfund to require states, such as North Carolina, to site hazardous waste facilities, including incinerators.

Changing government policies to strongly promote reduction would go a long way toward eliminating the perceived need for incinerators. For instance, the Capacity Assurance Planning process could be replaced with a strong national TUR and WR program. However, advanced reduction efforts alone would not instantaneously eliminate all of the nation's hazardous waste problems. While most process wastes can theoretically be eliminated or prevented in the long term, a reasonable estimate of achievable levels of hazardous waste reduction is 50 percent over five years according to the U.S. Congress Office of Technology Assessment[2].

Thus, even a strong nationwide reduction effort would still leave substantial amounts of waste in need of final, safe disposition. The remaining wastes would fall into three categories: current RCRA wastes; future RCRA-classified hazardous wastes; and superfund site wastes/harbor sediments. What can be done with these remaining wastes? Are there alternatives to burning them? The purpose of this report is to identify other available options that may be applied instead of incineration. In reporting on possible alternatives, it is not the National Toxics

[2]Serious Reduction of Hazardous Waste, US Congress Office of Technology Assessment, Washington, D.C. September 1986. Report #OTA-ITE-317

Campaign Fund's (NTCF) intention to endorse any of these options or to imply that they have all been adequately tested. The report simply provides citizens with more current information about them, so that they can elect for themselves how they want to deal with the hazardous waste existing in their communities. In addition NTCF strongly encourages the EPA and industry to put more money into the continued research and development of these alternatives instead of into the failed technology of incineration.

There are some existing toxic pollution problems that do not lend themselves to TUR or other existing alternatives. Until proper treatment alternatives are developed to deal with these particular toxics, NTCF believes that citizens should have the right to then choose the temporary solution of on-site, aboveground retrievable, monitorable storage. Instead of potentially leaking barrels of wastes dripping onto the ground the drums would be placed within other drums, doubly contained which could be carefully monitored and watched. Further protection against natural disasters such as storms, tornadoes and earthquakes could include construction of special containment buildings or bunkers.

Finally, given the range of available alternatives to incineration, it is important to emphasize that citizens should not only have the right to decide which alternative best suits their needs, but in addition they must not be held liable for the toxic damage done to their community nor responsible for remediation. Industry must be swift and forthright in cleaning up its own mess.

EXECUTIVE SUMMARY

Alternatives to Incineration: Technology Profiles of Alternative Treatment Methods

While EPA has opted to support incineration for numerous wastes, a wide variety of other treatment technologies are available that could be safer and far easier to control.

Many of these technologies incorporate the overarching principal of preventing the release of pollutants by using closed-loop batch processes similar to many processes long used in the chemical industry. In contrast to incineration, these processes do not automatically vent toxic wastes into the environment. Such closed loop processes have the additional advantage of being tailored to maximize destruction or detoxification of the specific contaminants they are handling, whether from a waste generator or a Superfund site, rather than trying to treat many different kinds of waste at the same time. If wastes are produced during the closed-loop reaction, they can be recycled back into the reactor, or sent through a train of treatment processes specifically designed to detoxify or destroy any remaining contaminants.

In the past, batch process technologies have not received the same level of funding or regulatory support as incineration. For instance, in the early 1980s, EPA's budgets for research and development from the Office of Solid Waste and Superfund were dominated by incineration projects. By 1986, EPA had spent more than $25 million in direct support and assistance on incinerator development. Part of that money also supported EPA's venture into constructing and operating their own mobile incinerator demonstration project. Even the initial funding to develop "innovative" technologies under Superfund focused on incineration technology and demonstration projects. As a result, only a limited number of alternative technologies have reached the market. Lacking the same level of federal funding provided to incineration, it has not been feasible for

these technologies to compete economically by undertaking the demonstration projects needed to prove them safe and effective. During the next few years, many of these technologies will finally become eligible for federally supported demonstration projects. However, the pace of their development may be accelerated or slowed depending on the availability of financial and regulatory support.

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Currently Available and EPA-Certified Technologies

In the past few years, a number of closed-loop processes have been developed to break down non-chlorinated and chlorinated organic compounds into simple, naturally occuring compounds: carbon dioxide, water, methane and hydrogen chloride. Some of these technologies are well established and endorsed in EPA regulations. For instance, EPA has generically identified numerous currently available and demonstrated technologies for treating hazardous waste. These technologies can be used alone or in "treatment trains" where several technologies are applied sequentially to a specific waste or waste stream. Examples include:

1. Solvent extraction: This involves mixing wastes with a solvent that is immiscible with the original waste (as with oil and water) and which preferentially dissolves the hazardous constituents of the waste. The resulting extract is high in organics and can be treated biologically or chemically. This option is currently used for some petroleum refining wastes.

2. Steam Stripping: This process removes easily evaporated organic compounds from liquid wastes. The organic compounds are often put out to the atmosphere, leaving the cleaned liquid behind.

3. Recovery of organics: Besides the processes listed above, EPA has identified an additional number of processes that can recover organic constituents from waste streams. Most are designed for wastewaters and not solids. These processes include distillation, thin film evaporation, carbon adsorption, critical fluid extraction and various physical and chemical methods to separate liquids from solids.

4. Wet oxidation: These processes destroy organic constituents in watery waste streams through

treatment with air at various temperatures and pressures. The efficiency of the destruction can be enhanced by using metal-based catalysts. Catalysts are added to the waste stream to speed up the reactions that destroy the organic constituents.

5. Chemical oxidation and chemical reduction: EPA listed numerous generic methods for treating wastes that can be used alone or in combination. These include ozone or ozone assisted by ultraviolet light, peroxides, persulfates and perchlorates for oxidizing wastes. Reduction can be accomplished using sulfur dioxide, sodium hydrosulfide and various compounds containing iron or other metals.

Other oxidation/reduction treatment technologies, such as the following examples, are just entering commercial development:

A. Supercritical water oxidation (SCO) dissolves organic compounds in water using moderately high temperatures and very high pressure in a completely enclosed reaction vessel. The end result is the oxidation of the compounds into carbon dioxide and water. The Defense Department considered this technology for a demonstration project for nerve gas destruction.

B. A thermo-chemical reduction process developed in Canada pumps waste or sediments into a closed reactor where they are heated to 850 degrees centigrade in the presence of hydrogen. The hydrogen should prevent the formation of dioxins, and convert chlorinated hydrocarbons to methane, ethylene and hydrogen chloride. Evaluation is currently underway in a pilot scale demonstration decontaminating sediment from Hamilton Harbor. If successful, this technology would be available for other projects within a year.

C. Steam Gasification involves the use of steam at very high temperatures in closed loop systems, in a process similar to reforming units in petroleum refining. This is not a combustion or burning process despite the high temperature. Steam can be used to destroy petroleum, pesticides, and other organic compounds, rather than using flames. The technology has been used successfully in several projects.

Dechlorination

Chlorinated hydrocarbons, such as PCBs, pentachlorphenol and dioxins, are some of the most toxic and environmentally persistent substances known. Unfortunately, they are also among the most difficult to destroy. Yet, a number of technologies, in addition to the oxidation and reduction technologies mentioned above, have been developed to address these compounds by removing the chlorine atoms from the hydrocarbons, leaving only relatively harmless byproducts. These technologies have been in development for nearly ten years. They are currently capable of treating a wide variety of wastes. Two processes are commercially available: (1) APEG-PLUS operated by Galson Remediation Corp. in Syracuse, N.Y. (2) KPEG operated by SDTX Technologies, Inc., Princeton, N.J. Another dechlorination method, Base-Catalyzed Dechlorination (BCD), has been developed and patented by EPA staff at the Risk Reduction Engineering Laboratory in Cincinnati and is currently undergoing field tests.

Microbial Treatment (Bioremediation)

Bacteria, fungi or other microorganisms are capable of transforming contaminants in soil or water into less complex and less toxic materials. These "bioremediation" strategies may either take place in the soil of a site, or in a batch reactor. Despite the fact that all such processes are very site specific and contaminant dependent, EPA has already identified 140 sites where bioremediation is under consideration as an alternative. For example, bioremediation using an in the ground (in situ) treatment for the soil and a batch reactor for the groundwater for destruction of polynuclear aromatic hydrocarbons (PAHs) and Pentachlorophenol was selected by EPA for the Superfund site in Libby, MT.

Comparative Costs of Treatment Alternatives

For simple cost comparison purposes, we can compare the costs of treatment of PCBs at Superfund sites. The list below contains ranges of costs of PCB destruction at a Superfund site.

Although cost should not be the only factor in choosing between the technologies, note that land-based rotary kiln incineration is the most expensive option for PCB containing wastes. The other options are fairly similar given the uncertainties in these cost estimates.

1. Land-based rotary kiln incineration $750-1,400 per ton
2. Mobile rotary kiln incinerator $400-600 per ton
3. Liquid injection incinerator $500 per ton
4. SCWO $500-1,000 per ton
5. APEG-PLUS $250-700 per ton
6. BCD $250-??? per ton
7. Thermochemical reduction $350-500 per ton

Current RCRA Wastes as of June 1990: EPA's strategy of limiting alternatives created a perceived incineration capacity shortfall

In the 1984 reauthorization of RCRA, EPA was required to establish a ban on land disposal and other forms of disposal of hazardous wastes for which there are other treatment options. This transition out of one environmentally destructive approach, land disposal, provided EPA with an opportunity to redirect waste management to the safest alternatives. However, in 1990, EPA missed this opportunity in its regulations implementing the 1984 law. While publicly acknowledging that there are many alternatives to incineration, EPA listed incineration as an option for many wastes, because they knew that industries would seek this "next cheapest" option. EPA stated that they added this listing for administrative convenience--to avoid processing "needless variances" for incineration. Thus EPA's land ban regulations listed incineration as an applicable disposal approach for 40 percent of RCRA wastes present in wastewater and 73 percent of wastes in solids, sludges or soil.

Based on the EPA's data, the shortfall of incineration capacity in 1990 was imposed by this

diversion of wastes from landfills to incinerators. Ironically, by late 1990, EPA's own data indicated that the incineration capacity "shortfall" was due solely to sludges generated from treatment of the 46.6 million gallons of leachate from hazardous waste landfills that should not have been built in the first place.

If, instead, EPA thoroughly evaluated each waste type to identify appropriate reduction and treatment opportunities, the generic process of incineration with its inevitable hazards would not have dominated the EPA regulations. Instead, toxic use reduction (TUR) and waste reduction (WR) would have predominated. Hazardous waste generators would have been required to review each waste stream and develop strategies to eliminate them or apply specifically suitable treatment options if waste elimination proved infeasible. Incineration completely undercuts TUR by seemingly providing a "generic" solution for many different wastes. In fact, in order to feed incinerators enough wastes to achieve adequate economies of scale, reliance on incineration actually requires that wastes not be reduced. By designating incineration as a "Best Demonstrated Available Treatment" for so many individual waste streams, EPA has fabricated a "need" for incineration. The alleged need for incineration is created by EPA policy and not by technical limitations of other alternatives.

Under closer scrutiny, the alleged current shortfall vanishes. Even a cursory examination of the EPA database indicates that most if not all the wastes listed as suited to incineration, and thus taking up part of current capacity, could be reduced or treated with other available technologies. So, with expanded TUR efforts, and increased use of treatment alternatives, existing incinerators would surely have enough capacity to handle all remaining RCRA wastes, including wastes that may be newly classified as "hazardous" in the future (According to existing studies, incinerator capacity is available in this country. However, the National Toxics Campaign Fund considers incineration to be a dangerous technology that should not be used. Local communities should have the right to close incinerators they consider hazardous).

One approach for eliminating the supposed incineration shortfall of nearly 47 million

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gallons identified in the 1990 regulations would work as follows:

1. The 46.6 million gallons of leachate sludge generated each year would be subject to increased dewatering (which can account for at least a 50 percent reduction and probably more since leachate is more than 75 percent water), and treatment and leachate reduction efforts at landfills would each result in another 15 percent reduction, leaving the volume of non-wastewater sludge from landfills needing incineration at 16.3 million gallons per year (68,000 tons).

2. Metal containing waste solids and sludges reported in the generator's survey as going to incinerators would be prohibited from incineration. This would eliminate 15.6 million gallons of waste from incineration.

3. Pesticide production wastes (3.5 million gallons were sent to landfills) could be reduced eventually to zero by stopping production. In the short term, greater dewatering could reduce the volume going to incinerators by 50 percent and dechlorination could reduce the wastes by another 25 percent. This would eliminate either 2.6 million gallons (with treatment) or 3.5 million gallons (by stopping production) from incineration.

4. Alternative treatment of K083 (aniline production wastes) would eliminate 0.1 million gallons of solids and sludge from incineration.

5. Restricting other waste solids and sludges from incineration where EPA has already identified other treatment options would eliminate another 2.6 million gallons of waste from incineration.

The total savings in current incinerator use from these changes would total at least 4 million gallons, even after landfill leachate is added.

Are there Alternatives for Specific RCRA Wastes?

The following are some examples of the waste types where EPA could have performed process-specific analysis and recommended alternatives instead of incineration. Together, the waste streams EPA was designating for incineration account for 224 million gallons of the 515 million gallons of wastes previously land disposed. Thus, EPA took 44 percent of wastes previously

disposed on land and redirected them to incineration, even though their own analyses showed available alternatives. Without these wastes, there would be no incinerator shortfall and no need for new incineration capacity.

Petroleum Refinery Wastes (K048-K052): 171.2 million gallons per year previously land disposed; 39 million gallons of non-wastewater (e.g. solids and sludges) Alternatives to incineration: Solvent extraction technologies followed by other treatment technologies such as chemical oxidation or biological treatment can destroy PAHs and obviate the need for incineration. Such a "treatment train" was suggested for other wastes and is commonly used in wastewater treatment plants.

Halogenated Pesticide Wastes (D012-D017): 3.5 million gallons per year previously land disposed. Alternatives to incineration: EPA stated that ... "other [treatment] technologies besides incineration may be able to achieve an equivalent performance." These other technologies include dechlorination. In addition, it should be noted that these pesticide production wastes are from a few specific pesticides either banned or restricted in the United States and in many countries. Many experts including the National Academy of Sciences believe that these pesticides could be banned without serious economic or public health consequences. Banning the pesticides would eliminate the hazards associated with disposal of the resultant wastes.

Multisource Leachate-Landfill/ Treatment, Storage and Disposal (TSD) leachate (F039): 46.6 million per year previously land disposed; all was assumed eligible for incineration. This waste consists of sludges from the wastewater treatment of landfill leachate. This is the major category of waste currently driving EPA's stated regulatory need for additional incineration capacity. Alternatives to incineration: More extensive treatment would drastically minimize any need for incineration of sludges since the residual levels of contaminants would be much lower. Extensive treatment and materials recovery would become comparable in cost to incineration as landfills are

phased out and leachate production is minimized.

Distillation Bottoms from Aniline Production (K083): 5 million gallons per year of liquid wastes and 0.1 million gallons of non-wastewater solids. Alternatives to incineration: Several options, including recovery of solvents and raw material by distillation techniques, are available to handle this waste stream without incineration, yet EPA did not seriously consider any other alternative besides incineration because they did not obtain the appropriate information or analyses.

Wastes Currently Sent to Incinerators

A review of EPA's database on waste generation and management used in the land ban regulations indicates that a large quantity of waste sent to incinerators could have been treated by other technologies. Even more surprisingly, there are many wastes being burned that contain the same amount of toxic materials when they come out of an incinerator as when they go in. Putting such wastes through an incinerator does not affect the toxicity of the wastes. It merely reduces the risks of liability facing the generators.

The principal offender in this regard is the massive amount of toxic metal wastes that go into incinerators. For example, in EPA's base year (1986) about 6 million gallons of waste listed as hazardous because of the presence of lead (D008) was incinerated. While EPA requires metal recovery before land disposal of wastes, this waste is still finding its way into incinerators. Electroplating sludge (F006) accounted for 2.3 million gallons (9774.52 tons) of waste sent to incinerators. Also, 1.7 million gallons (7081.52 tons) of incinerator ash was sent to an incinerator. Finally, EPA reported that 935,000 gallons (3910.27 tons) of chromium containing waste (D007) was incinerated. These seven wastes account for nearly 2 percent of the hazardous waste reported to be incinerated in 1986. These wastes should not be allowed to go into incinerators at all, since incineration cannot eliminate their toxic qualities.

Conclusion

Given the available alternatives for many wastes, there is no incineration capacity shortage on a national basis. There may be regional variations and specific companies may have specific problems, but on the whole, there is more than adequate incineration capacity for wastes that have no other management alternative at present.

Many wastes are sent to incinerators for administrative ease for both waste generators and EPA, rather than as a technical requirement. The current alleged capacity shortfall was created when EPA tried to replace the "generic" waste management approach of the past, i.e. land disposal, with another "generic" waste management approach, i.e. incineration. Generic approaches cannot be as effective as waste stream specific solutions.

EPA's evaluation of waste generation and waste handling capacity indicates that there are sufficient facilities to manage RCRA wastes in accord with EPA's regulations. The reported shortfall would be eliminated with removal of wastes from incineration when other options are available (including chlorinated pesticide wastes) and with more thorough treatment of landfill leachate.

However, the National Toxics Campaign Fund considers incineration to be a dangerous technology that should not be used. Local communities should have the right to close incinerators they consider hazardous, and they should be aware of other alternative treatment technologies which exist.

Recommendations

1. Federal and state law and regulations should require the use of TUR and alternative treatment technologies prior to further investment in incineration. A moratorium on new hazardous waste incinerators, as well as expansions, should be established.

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2. "Fast track" the development of alternative treatment technologies by stepping up federal financial and regulatory support.

3. The federal Capacity Assurance Planning requirement (in the Superfund Law) should be repealed.

4. EPA should be required to re-evaluate its land ban regulations to eliminate the incineration option, especially where there are other available alternatives.

5. EPA should prohibit the incineration of hazardous wastes for which the principal contaminant is a toxic metal such as lead, cadmium, chromium, mercury or nickel.

6. Local citizens should be given the authority and resources to negotiate directly with industry and government to insist on the application of alternative treatment technologies.

Testimony of William Springman
Plant Manager, Trident Cement Plant
Holnam Inc
Three Forks, Montana

Before the Senate Natural Resources Committee
State Legislature of Montana

January 25, 1993

Mr. Chairman and Members of the Committee:

You heard testimony last Friday concerning health hazards that might be associated with cement plants in general and with those that use hazardous waste as a fuel. None of this testimony was given by any individual who was knowledgeable about the operation of the cement plant. None of them has the expertise in this field that is held by the joint expertise of the scientists that authored the Boiler and Industrial Furnace Regulations.

- You heard testimony last Friday that "dangers" exist during a so-called upset condition in the kiln. These "dangers" as they were represented were not accurate. Following is an accurate representation of what happens in a cement kiln: There are several computerized safeguards which automatically shut off the hazardous waste fuel supply to the kiln during maintenance and alleged upsets. Thus the hazardous waste fuel supply is completely and immediately shut off. During this time, there are no emissions from the hazardous waste fuel that constitute any health hazard or violation of any regulation.

- You heard testimony last week that if the Trident plant is allowed to burn hazardous waste, you can expect that one person in 100,000 will die from cancer. That is not the case. The Environmental Protection Agency and the Montana Department of Health and Environmental Sciences Risk Assessment standards assume one individual standing in the one spot of maximum exposure for 70 years, ingesting maximum concentrations of stack emissions. Only that one theoretical individual would have one chance in 100,000 of developing cancer.

Distributed by Jerome Anderson, registered lobbyist for Holnam Inc

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- You've heard testimony from the opponents that cement kiln dust studies have just recently begun. This is not true. Today, we are submitting three independent studies undertaken over the past decade which prove that cement kiln dust is a thoroughly studied issue. This is in addition to the data presented in the study "All Fired Up" which Mr. Anderson provided to you before the start of the session.

- You heard testimony last week suggesting that because a small sample of cement kiln dust allegedly contains harmful constituents, all cement kiln dust from any plant would exhibit the same characteristics. This is not true. Due to differences in cement plant design, cement kiln dust characteristics at one cement plant are not necessarily the same as cement kiln dust at another. The Boiler and Industrial Furnace regulations and the Resource Conservation and Recovery Act regulations require specific studies to ensure there is no health risk at any plant, including ours.

- You also heard last week, a case made for a buffer zone around cement plants using hazardous wastes as fuels. The claim for a buffer zone was based upon outdated, obsolete data which does not take into consideration technological advancements in pollution control equipment and more protective federal and state regulations designed to prevent environmental damage.

- Finally, you heard in last week's testimony reference to a leaked EPA study wherein incomplete and inconclusive data was used to suggest that cement clinker or cement kiln dust was unsafe. EPA itself has cautioned that the data should not be used to draw such a conclusion, since the study is not yet complete. The results of all of the studies that we have submitted today show that there is no scientific basis to indicate that cement kiln dust is harmful to human health or the environment.

Testimony of Stuart Weiss
Holnam Inc
Dundee, Michigan

Before the Senate Natural Resources Committee
State Legislature of Montana

January 25, 1993

Mr. Chairman and Members of the Committee:

I am Stuart Weiss, Senior Process Engineer for Holnam at its corporate offices in Michigan. Today I am here to express Holnam's opposition to Senate Bill 158. But the way I hope to do it is to tell you about a subject near and dear to my heart -- why cement is a great product, and why it is a great and safe product no matter what kind of fuel is used to fire a cement kiln.

The key word here is safe. Not just because I think it's safe. It is safe because there are plenty of conclusive data to prove it's safe and because the science of the cement making process says that it will be safe.

Any suggestion to the contrary is just that -- a suggestion -- designed to sow seeds of doubt. As you all know, all that is needed to sow those seeds of doubt is an implication. Today, I want to give you some facts to clear up some of the doubt planted by vague or unsubstantiated suggestions.

But before I do that, I'd like to describe the cement making process.

During the course of a hearing and through conversations with you, it is often easy for us in the industry to assume that you know how cement is manufactured and why the fuel substitution is so critical. Your understanding of our industry cannot be taken for granted, however. As a result, I want to take a minute to describe that process in its simplest terms. Of course, I would be willing to describe it in more detail if you wish during the question period.

Cement manufacturing begins with the raw materials. Limestone is mined and then crushed to reduce its size. It is then mixed with other materials, such as shale, iron ore, clay and sand. Depending on the design of a particular plant, the material is then either mixed with water to form a slurry, or blended together in a dry form. The Trident plant utilizes the slurry, which is called a wet process.

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The material is then fed into the kiln, which is a long, round steel furnace lined with refractory brick for heat efficiency and for protection of the steel shell. The kiln, as our Trident Plant Manager Bill Springman emphasized last week, is the heart of the cement manufacturing process. It is what makes the cement-making process such an energy-intensive one.

Material is fed into the kiln at the high end and, as the kiln rotates, it slowly moves to the lower end. In a wet process where material enters in the slurry form, water is driven off and evaporated as the raw material temperatures begin to climb.

In the kiln, flame temperatures must reach over 3000 degrees Fahrenheit in order to get the material temperature to about 2600 degrees. At this temperature a chemical reaction takes place which transforms the raw material into small walnut-sized stones called cement clinker. The clinker comes out of the kiln, is cooled, and is then mixed with gypsum and crushed into the powder known as cement.

The fuel necessary to heat the kiln to such intense temperatures must have a high heat value, which is typically measured in British Thermal Units, or BTUs. Currently, the plant uses coal and natural gas. The plan to recycle selected wastes as fuel is based on the BTU value of the waste. Which wastes are chosen are based on several characteristics. As you are aware, Holnam announced that it has reduced the number of its proposed waste classifications by over 97%. The plant will also use only solids -- all free standing liquids have been eliminated.

Your concern about the impact the waste could have on the cement, as well as users of it, is a valid one. Curiosity alone would lead most to ask the same question. My answer is my primary message to you -- cement made in a process utilizing hazardous waste as fuel is safe.

One of the senators asked me at last week's hearing if it was okay to say just that cement made by a process that uses waste derived fuels might not be safe because we aren't sure. My answer to that is no! There are no maybe's about it. And here's why.

This rock is one of the hundreds of thousands of tons of limestone rocks that Bill Springman's Trident Cement plant uses to make cement. You see, the problem with rocks is that they are never quite the size and shape that you need to build a birdbath or a road or a section of water pipe. That's where the cement comes in. I'll elaborate on that later.

Now this rock came from somewhere in the earth's crust -- somewhere near Bill's plant. And even though it's mostly limestone, it has impurities in it. Now if we take this rock, beat it with a hammer into a powder and then add water, we will have wet powdered rock -- mud, if you will.

And if you boil that mud for a while and then test the water for the metals locked up in the rock you'll find out that the metals stay put in the rock. The water is safe -- although it might taste a little gritty.

Why is it that the metals do not come out? Because they are part of the rock -- incorporated into the essence of it. Imagine it this way. In our bodies, you and I have traces of all of these metals. If I were to take a biopsy of my tissue or a piece of fingernail, I could test it and find just about all the metals that I find in the rock -- but they will not come out in the bathtub -- they are part of us. In this rock, the metals aren't sitting in some crack or pore in the rock waiting to get out. That is why that water in which I boiled the ground-up rock is safe.

Now let us talk about making cement. If I take this rock and grind it and then add the right amount of sand or clay and burn it at a temperature high enough to melt it -- about 2600 degrees -- it changes. What I end up with is a new powder that gets hard -- like that rock -- when water is added. Only since it is a powder, I can add water and sand and gravel, and then pour it into a mold -- and end up with a cube like this concrete lab test cube -- or a birdbath or a road. That is why cement is so great -- we can make stone in any shape we want.

Now, remember the impurities that I was talking about before? They are still there. If we beat this cube into a powder with a hammer and add water, we end up with ground up concrete in water. And if I test that water for metals we still will not find any because the metals stay put in the cement. Again, it becomes part of the essence of the cement. The water from that ground up concrete is safe -- although, again, it might taste a little gritty unless the solids are filtered out.

Why is it that the metals didn't come out? Because in the kiln, at temperatures hotter than a volcano, they become part of the cement. They're not sitting in some crack or pore in the concrete waiting to get out. They are part of the cement. That is why the cement and concrete are safe and the water is safe to drink.

Now you may ask -- how do I know this, aside from the theory of cement chemistry? I know this because we as a cement industry have checked. We've checked our cement both where we use only fossil fuels and where we use waste derived fuels. You cannot tell any difference. The cement is safe when made with either fuel.

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DATE 1-25-93
SB-158

AVERAGE TEMPERATURES °F

The cement trade association, the Portland Cement Association or PCA, tested hundreds of samples from 97 North American cement plants burning both fossil fuels and waste derived fuel. They found that there is no difference -- the cement product is safe.

And an independent contract environmental firm tested our product and did a health risk assessment and found that there is no difference -- the risks do not change with the use of waste fuels. It is a safe product.

Holnam's own laboratories have tested cement from our kilns in Missouri and South Carolina that recycle waste as fuel and found that the metals just don't come out -- Holnam's cement product is safe.

And if that weren't enough, when people started this scare about cement, manufacturers went to the NSF -- the National Sanitation Foundation. They've been testing cement because manufacturers wanted to make sure that there was no threat to drinking water if cement from kilns that use waste fuels was used in concrete water pipe. Mr. Chairman, Members of the Committee, the NSF tests show that these cements are safe. The cement industry's tests have been confirmed.

And what about organics? Despite the fact that our kiln temperatures destroy the organics, NSF conducted a thorough examination of our cement made from kilns burning waste fuels. They tested for dioxins and other materials that have prompted public concern. They could not find any.

Now the cement industry expected these results and we're glad that we have data to prove that.

The cement is no different when recycling waste derived fuels than when not. That's why our workers have one of the lowest incidents of work-related illnesses of most of the industries in this country -- whether burning coal or gas or waste fuels. That is why the communities where cement plants have been located for nearly a century have not had health problems caused by our industry. Making cement with or without the use of waste derived fuel -- is still the same process. The product is safe.

And that, Mr. Chairman and Members of the Committee, is why it would serve no useful purpose to regulate cement in a way that lends any credence to the fears that have been raised. The data and the science prove that the product is safe and that the premises claimed in Senate Bill 158 are unjustified.

Thank you for your kind attention.

Testimony of Gary Sauer
Vice President, Sales West, Holnam
Before the Senate Natural Resources Committee
Regarding Senate Bill 158
January 25, 1993

Mr. Chairman and Members of the Committee:

My name is Gary Sauer. I am Vice President of Sales for Holnam's west marketing division. The market served by the Trident plant falls within my area of responsibility.

I am fully aware of the technical assumptions expressed in Senate Bill 158. Mr. Weiss has adequately addressed those issues.

I am present today to oppose the bill, and will concentrate on the restrictions that it would impose on the sale of cement in Montana. I will do so by briefly providing you with an overview of what it could mean in a marketing context for our company, the industry, and the state of Montana, if you require us to label our product as proposed in this bill.

I understand that there has been testimony before this committee that our ability to compete is not an issue here. That testimony could not be more wrong. One of the major reasons Holnam is seeking permits to recycle waste as a fuel is to maintain our ability to be competitive in the cement market. Over twenty-five plants currently are using waste fuel. Their ability to offset purchases of coal or natural gas with waste fuels gives those facilities the opportunity to produce cement at a lower cost.

The opportunity to produce at a lower cost should not be taken lightly, nor should it be seen as an unnecessary luxury or convenience. That lower cost allows such facilities to realize a better profit margin (or in some cases, to reduce losses) against the sales price of cement, which has remained relatively flat the last ten years. In other words, as the costs of producing cement have risen (for fuel, utilities, taxes, payrolls, etc.), the flat selling price has reduced or eliminated the ability of many companies to realize a profit.

Distributed by Jerome Anderson,
registered lobbyist for Holnam Inc

SENATE NATURAL RESOURCES
EXHIBIT NO. 7
DATE 1/25
BILL NO. 158

Profit is not a dirty word. Every person in the business world, whether it is cement or agriculture, has earning a profit as an objective. Long-term survival is threatened when costs exceed revenues for an extended period. Without profits, growth is slowed or halted, reinvesting in research or equipment is postponed, and employment and the tax base are adversely affected.

In the case of the cement industry, for the reasons mentioned about costs and prices, "profit" has not been part of the vocabulary when discussing annual results. Most companies, including Holnam, have turned in significant losses. Holnam has been fortunate in surviving these losses due to sound financial management and the strength of its shareholding base. No company, however, can afford to continue absorbing losses indefinitely.

Many cost reduction efforts have been put in place. Holnam has cost reduction programs in place at every one of our facilities, and the use of waste fuels to offset the cost of natural fossil fuels is seen as a major component in our long-term program to return to profitably.

If we are precluded from selling cement to the state or forced to label our product as stipulated in SB158, then the very improvement in our ability to remain competitive that a waste fuels program can provide will be eliminated. The reason comes right back to costs -- this legislation would increase our costs by forcing the product made right here in Montana to be shipped to other, more distant markets and restrict our ability to sell the product in those markets.

Holnam's Trident plant manufactures over 300,000 tons of cement annually. About 100,000 tons from the plant are sold in the state. If those sales were restricted due to legislation that has no substantive reason for passage, the long-term potential for the plant to be competitive begins, once again, to evaporate.

You should also approach your deliberations on this bill knowing what it could mean to the taxpayers and consumers in the state of Montana. By eliminating cement made by Montana suppliers, the state will ultimately be paying higher taxpayer dollars for cement made by less competitive producers. The reasons -- the suppliers would ship the product in from greater distances, thereby passing on their higher transportation costs to you. Consumers would feel the same effect through their purchases of bagged cement for their own use, or through higher project charges passed on by contractors.

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Mr. Chairman, members of the committee, you and I are in similar positions. We each are presented with decisions on a daily basis that impact many people and have economic consequences. In many of those instances, we are never going to please every party with our decisions. Evaluating the facts behind the issues, however, should guide our decision making.

This bill makes assumptions that are not correct, and consequently imposes restrictions that are not necessary. The facts that have been presented will hopefully lead you to agree that the right decision will be to oppose this legislation.

Thank you.

CONCENTRATIONS OF LEAD

Cement Made by Burning Hazardous Waste	11-12 ppm
Crustal Rocks of the Earth (Average)	12.5 ppm
Crustal Rock (Normal Range)	3.5-20 ppm
Uncontaminated Soil (Normal Range)	10-70 ppm
Roadside Soils (Range)	218-10,900 ppm
Potato (Whole)	1.1 ppm
Hay	10.0 ppm

Sources:

Krauskopf, Introduction to Geochemistry, 1979
Jaworski, Associate Committee for Environmmental Quality, 1978
Kabata-Pendias & Pendias, Trace Elements in Soils & Plants, 1984

SENATE NATURAL RESOURCES
EXHIBIT NO. 8
DATE 1/25

TCLP Metals Leachability in Cement

Metal	Montana City	Louisville	Chanute	Foreman	Limit*
Antimony	ND**	0.007	0.053	ND	1.0
Arsenic	0.025	0.031	0.020	ND	5.0
Barium	1.21	1.01	1.66	1.02	100
Beryllium	0.0002	0.0008	ND	0.0002	0.07
Cadmium	ND	ND	ND	ND	1.0
Chromium	0.07	1.21	0.58	0.91	5.0
Lead	0.002	ND	ND	ND	5.0
Mercury	ND	ND	ND	0.00074	0.2
Nickel	ND	ND	ND	ND	70
Selenium	ND	ND	ND	ND	1.0
Silver	0.07	0.07	0.09	0.07	5.0
Thallium	0.011	ND	ND	ND	7.0

Notes

* LIMIT: Resource Conservation and Recovery Act maximum allowable concentration.

** ND : Below analytical detection limits.

Source: " An Analysis of Selected Trace Metals in Cement and Kiln Dust" Portland Cement Association, 1992

SENATE NATURAL RESOURCES
EXHIBIT NO. #9
DATE 1/25
BILL NO. 158

Homebuilders Assoc. of Billings
252-7533

S.W. Montana Home Builders Assoc.
585-8181

Great Falls Homebuilders Assoc.
452-HOME

Flathead Home Builders Ass
752-2522

Missoula Chapter of NAHB
273-0314

Helena Chapter of NAHB
449-7275

Nancy Lien Griffin, Executive Director
Suite 4D Power Block Building • Helena, Montana 59601 • (406) 442-4479

SB 158
Requiring the Labeling of Cement
Recommend:
Do Not Pass

Nancy Griffin, Executive Officer, Montana Building Industry Association, representing six local home builders associations and 800 members in the building and building supply business.

Recommend a do not pass for the following reasons:

1. Encourages Workplace Liability

This Legislature has heard time and time again the problems created when workplace conditions encourage litigation between employers and employees. Already the courts are jammed and our Worker's Compensation system has been overloaded but just such invitation to litigation. Jobsite conflicts can only be accellerated by labeling of a products which assert that employers may be liable. Such labeling only encourages lawsuits in an already litigious workplace environment.

2. Hazard is not Scientifically Verified

Although the conflict about the potential safety of burning hazardous wastes is the subject of some difference of opinion, it has not been proved that hazardous waste does leach from cement manufactured by the burning of hazardous waste. In addition, industry represntatives have stated that the highly monitored and technical review process are designed to detect such occurances; and even then it will be years before lenghty review procedures have been completed. Why label a product when it is only speculative that the labeling is correct? Why label a product now, when the actual product manufactured by the questionable process, is years from production?

3. Need for Competitively Priced Construction Supply Products

Montana presently enjoys the competitive pricing available when a product is manufactured within reasonable transportation distances. As any Montana businessman realizes, freight and acquisition of a product in our somewhat isolated state can become a problem. Our industry would prefer that construction supply manufacturers be allowed to continue to manufacture their product within Montana to assure a consistent supply of a competitively priced product.

SENATE NATURAL RESOURCES
EXHIBIT NO. 10
DATE 1/25
BILL NO 158

WETA

Western Environmental Trade Association

Aspen Court, 33 South Last Chance Gulch, Suite 2B
Helena, Montana 59601
Phone (406) 443-5541
Fax # 443-2439

TESTIMONY ON BEHALF OF THE
WESTERN ENVIRONMENTAL TRADE ASSOCIATION

SENATE NATURAL RESOURCES COMMITTEE

SENATE BILL 158

JANUARY 25, 1993

Mr. Chairman, Members of the Committee, for the record my name is Peggy Olson Trenk and I represent the members of the Western Environmental Trade Association, a coalition of industry, recreation and business groups.

I appear before you today in opposition to SB 158. We do so not because we don't believe the Legislature should be diligent in protecting the health of Montana citizens and the environment in which they live. That is certainly an appropriate role. We do however, believe that such a role carries with it the responsibility to separate fact from fiction in a way that serves the public good, but does not infringe on the ability of established businesses to operate in a safe and economical manner.

SENATE NATURAL RESOURCES
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BILL NO. 158

In this instance, there is no scientific data to suggest that there is any health or other risk to workers or to the general public from the use of cement made by utilizing waste fuel technologies. Rather, the data demonstrate that cement made with waste fuel is quite safe.

There is no public good to serve by requiring labeling of the nature proposed in this legislation. What will be served is an attempt to prevent cement manufacturers from operating their companies using established technologies that not only make them more competitive, but also provide a means of recycling some of the hazardous wastes that are an inevitable part of our civilized society.

I am reminded of the recent national scare over the use of Alar by apple growers in the Northwest. CBS News and Academy Award-winning actress Meryl Streep told us we were poisoning our children by allowing them to drink apple juice which might contain Alar.

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As a mother of a young child who consumed large quantities of apple juice, I joined a lot of other parents in throwing out every baby food product I had on the shelf that could be associated with apples--and I did so without ever checking the facts. I understand how easy it is to be frightened when the safety of our children is at stake, but as parents we also have a responsibility to deal with fact, not fiction.

I did not carry out my role appropriately because as you'll recall, it turned out there never was any truth to the claim Alar presented a serious health risk. Producers in the Northwest lost their businesses based on bad information. Parents were frightened based on bad information. What's worse is, other than a little-publicized statement from the network, no one was ever even held accountable for the damage.

Please don't let us as a society, and particularly the State of Montana make a mistake like that involving Alar. Do support the Department of Health and Environmental Sciences in their effort to work with the cement companies as they walk through a rigorous permitting process that will protect the public good. You don't need SB 158 to accomplish that, and I urge you to vote no on this legislation.

PHONE: (406) 356-2137
(406) 356-2334

PSC-1711
ICC-144436

LICENSED GRAIN DEALER

Prince INC.

P.O. BOX 440
FORSYTH, MONTANA 59327

Washed Sand & Gravel
Federal & State Specifications
Portable Batch Plant
Portable Crusher
Dry Bulk - Pneumatic
Refer - Heavy Haul
Ready Mix Concrete

January 25, 1993

Don Bianchi, Chairman
Senate Natural Resources Committee
State Capitol
Helena MT 59620

RE: Senate Bill 158

Dear Mr. Bianchi:

Prince, Inc. is a family owned trucking and construction firm that has been operating in the state of Montana since 1964. We are based in Forsyth MT, where we also operate a ready mix concrete plant, but have highway construction projects in various parts of the state. Having been in the construction business for 29 years, we feel we are familiar with the field and, for the following reasons, are opposed to Senate Bill 158.

The passage of this bill would, by requiring the labeling of cement, increase the manufacturing costs, which would result in increased cement prices. This cost increase will result in the increased cost of infra-structure projects in Montana, which the tax payers pay for. At this date, there is no scientific evidence that the cement produced using supplemental fuel presents any health risks. This bill would result in lost Montana jobs in the cement manufacturing business, the concrete business and in other construction related employment because almost every construction job uses cement as a basic construction material.

We strongly urge that you oppose this bill and look forward to hearing from you on your decision on it.

Sincerely,

Bonnie

Bonnie C. Prince
President

SENATE NATURAL RESOURCES
EXHIBIT NO. 12
DATE 1/25
BILL NO. 158

PORTLAND CEMENT ASSOCIATION

SENATE NATURAL RESOURCES
EXHIBIT NO. 13
DATE 1/25
BILL NO. 158

Cement Making Gives 'Unrecyclables' a 2nd Chance

While the limitations of the landfill are well-documented, alternatives are anything but well-developed. But to the short list of other waste disposal options—recycling, waste-to-energy cogeneration, or outright incineration—add one that combines elements of all three: resource recovery in cement manufacturing. For in this 3400°F process lies the opportunity to use wastes both as fuel and raw materials while safely destroying them.

"Waste materials basically contain energy," explains Dr. Charles Proctor, waste disposal expert at the University of Florida. "It's available as a fuel. Through simple disposal, such as in a landfill, we completely neglect the opportunity to recover energy from a given material. In the cement kiln, we both recover energy that's available in the waste material, as well as have it absorb and utilize the materials that would otherwise become dangerous to us."

The same quality that makes these materials dangerous as wastes—their flammability—makes them valuable as fuel. And cement-making, with its high energy demand and ability to burn a wide range of fuels, offers an ideal medium for recycling waste into energy—while both reducing fossil-fuel use and manufacturing an essential product: portland cement that, when mixed with water, sand, and stone, forms concrete, our most basic building material.

If all this sounds too good to be true, consider the unique environment of the cement kiln. This huge industrial furnace fuses cement's raw materials—common minerals such as limestone, clay, and sand—into marble-sized pellets called clinker, which is then ground with a small amount of gypsum into portland cement. To trigger the necessary reactions in the kiln, a 3400°F flame heats these raw materials to about 2700°F. That's 20% hotter than molten iron, 30% hotter than a commercial waste incinerator, and 40% hotter than a fossil-fueled electric power plant.

"In the cement kiln, because of the high temperatures, the long residence time, and the great degree of turbulence, we have greater assurance that the materials are being processed correctly," explains Dr. Proctor. "Studies to date show that virtually all of it is destroyed—that it becomes unmeasurable."

Waste-derived fuels such as tires can be used whole, shredded, or powdered. Liquid wastes, such as spent solvents or used motor oil, can be injected at the burner

With its high heat, long residence time, and great degree of turbulence, cement kilns offer the right chemistry for waste-to energy recycling.

along with conventional fossil fuels. Scrap tires, among the most common waste-derived fuels in cement making, provide both energy and raw materials. Pound for pound, tires have more fuel value than coal. And their steel belts offer a source of iron, an essential ingredient in cement.

Cement plants easily meet the Environmental Protection Agency's regulatory benchmark of 99.99% destruction of organics—often attaining 99.9999% destruction, 100 times EPA's safety threshold.

According to Robert W. Crolius, of the Portland Cement Association's Washington, D.C., office, current environmental regulations are well developed and ensure public safety. Whether burning conventional fuels or waste-derived fuels, cement plants are carefully regulated by existing EPA and state provisions.

A separate set of regulations specifically address waste fuels in boilers and industrial furnaces such as cement kilns. These so-called "BIF" rules mean that cement plants are governed by stricter regulations than those required for commercial waste incinerators.

"The cement industry is committed to environmental quality. In fact, we are part of the solution to environmental problems," concludes Crolius. "Here is an opportunity to remove potentially harmful materials from the environment while conserving scarce fossil fuels. It makes good, safe environmental sense."

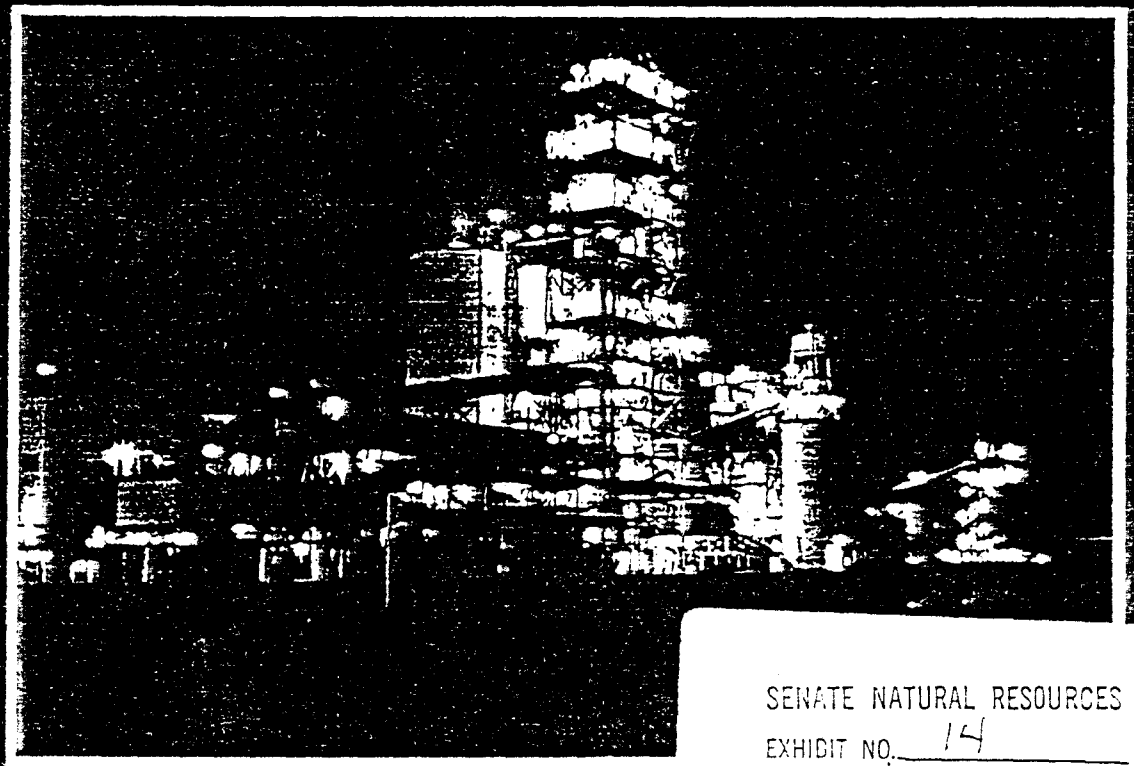
A new video from the Portland Cement Association, *Putting Waste to Work—A Sensible Solution*, profiles the use of waste-derived fuels in cement manufacturing. Copies are available for $25 each, including postage and handling, from PCA's Order Processing Department (708/966-6200). □

Portland Cement Association

PCA

The original is stored at the Historical Society at 225 North Roberts Street, Helena, MT 59620-1201. The phone number is 444-2694.

An Analysis of Selected Trace Metals in Cement and Kiln Dust



SENATE NATURAL RESOURCES
EXHIBIT NO. 14
DATE 1/25
BILL NO. SB 154

Information Circular 8885

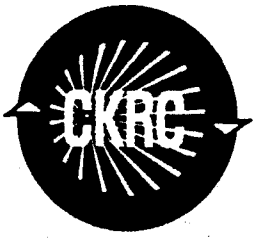
Characterization of U.S. Cement Kiln Dust

By Benjamin W. Haynes and Gary W. Kramer

UNITED STATES DEPARTMENT OF THE INTERIOR
James G. Watt, Secretary

BUREAU OF MINES
Robert C. Horton, Director

EVALUATION OF ACCEPTABLE LEVELS OF TRACE ELEMENTS IN PORTLAND CEMENT



Prepared for:

THE CEMENT KILN RECYCLING COALITION
Washington, D.C.

Prepared by:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
St. Louis, Missouri

October 1991

ESE No. 591-1047-0400

SENATE NATURAL RESOURCES
EXHIBIT NO. 16
DATE 1/25
BILL NO. SB 158

Environmental Science & Engineering, Inc.

DATE 1/25

SENATE COMMITTEE ON Natural Resources

BILLS BEING HEARD TODAY: SB 158

Name	Representing	Bill No.	Check One: Support	Check One: Oppose
Tom Daubert	Ash Grove Cement Co	SB158		X
JEROME ANDERSON	HOLNAM INC.	SB158		X
William Spriggman	" "	SB158		X
Gary Sauer	Holnam	SB158		✓
STUART WEISS	HOLNAM	SB158		✓
Jerry Chura	"	"		✓
Peggy Olson Trenk	WETA	SB158		✓
David Roemer		SB 158	✓	
ED HANDL	SRM	SB158		✓
David Goldman	Farmers Ins. Group	"	✓	
Richard Knotherud	DHES	"		
Linda Holben		"	✓	
Roger Thomason	DHES	SB158		
Douglas Mayor		SB158	✓	
RACHAEL SIRS		SB158	✓	
GEORGE OCHENSKI	WMM	"	—	—

VISITOR REGISTER

PLEASE LEAVE PREPARED STATEMENT WITH COMMITTEE SECRETARY

F10

DATE 1/25/93

SENATE COMMITTEE ON Nat. Resources

BILLS BEING HEARD TODAY: SB 158

Name	Representing	Bill No.	Check One Support	Oppose
David Owen	MT Chamber of Commerce			✓
Ed Maronick	Helena Sand & Gravel			✓
Carl Schweitzer	Mt Const Assoc			—
Erik Sirs		158	✓	
Colin Fitzpatrick	Pegasus Gold Corp	158		✓
Nancy Griffin	Montana Building Industry Assoc	SB 158		✓
Betty Grizzle	MATB	SB 158	✓	
Mary O'Brien	MATB	SB 158	✓	
Brian McNitt	MEIC	SB 158	✓	
Brady Wiseman	MATB	SB 158	✓	
Nancy McCaffree		SD 158	✓	
Dan Allen	(Lucas Conway Allen & Associates)	SB 158		✓

VISITOR REGISTER

PLEASE LEAVE PREPARED STATEMENT WITH COMMITTEE SECRETARY

F10