MINUTES

MONTANA HOUSE OF REPRESENTATIVES
52nd LEGISLATURE - REGULAR SESSION

COMMITTEE ON NATURAL RESOURCES

Call to Order: By **CHAIRPERSON BOB RANEY**, on February 15, 1991, at 3:00 pm.

ROLL CALL

Members Present:

Bob Raney, Chairman (D)
Mark O'Keefe, Vice-Chairman (D)
Beverly Barnhart (D)
Vivian Brooke (D)
Ben Cohen (D)
Ed Dolezal (D)
Orval Ellison (R)
Russell Fagg (R)
Mike Foster (R)
Bob Gilbert (R)
Bruce Measure (D)
Tom Nelson (R)
Bob Ream (D)
Jim Southworth (D)
Howard Toole (D)
Dave Wanzenried (D)

Members Excused: David Hoffman (R)
Dick Knox (R)

Staff Present: Gail Kuntz, Environmental Quality Council
Paul Sihler, Environmental Quality Council
Lisa Fairman, Committee Secretary

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

Announcements/Discussion:

HEARING ON HB 586

Presentation and Opening Statement by Sponsor:

REP. CHUCK SWYSGOOD, HD 73 - Dillon, said HB 586 will provide a source of revenue to rehabilitate state water conservation projects, such as state-owned dams, and help pay the debt of the Broadwater Power Project. **EXHIBIT 1**

Proponents' Testimony:

Wayne Wetzel, Department of Natural Resources and Conservation (DNRC) Deputy Director, said he didn't have much to add. The intent of the Department has been to allocate state-owned hydropower project revenues to the rehabilitation of state-owned dams.

Opponents' Testimony: none

Questions From Committee Members: none

Closing by Sponsor:

REP. SWYSGOOD urged passage of HB 586.

HEARING ON HB 630

Presentation and Opening Statement by Sponsor:

REP. SCOTT MCCULLOCH, HD 96 - Billings, said HB 630 reinstates the governor's Emergency Disaster Fund spending authority. Currently, the governor can spend up to only $2 million from the General Fund for disasters in a biennium. The governor's spending authority is progressively diminished as costs of each disaster deplete the fund. If the money is recovered, the spending authority would be reinstated to the level of the amount recovered.

Proponents' Testimony:

Doug Booker, Centralized Services Administrator for the Department of Military Affairs, said that due to fires and other disasters, the disaster fund sometimes is reduced to nearly nothing. Any money recovered from responsible parties would go back into the General Fund, allowing that much money to be spent again on another disaster.

Opponents' Testimony: none

Questions From Committee Members:

REP. ELLISON asked what would happen if a disaster occurred and the emergency fund were bankrupt. **Mr. Booker** said there would be a special session.

REP. RANEY asked if money spent from the disaster fund would be automatically reappropriated from the General Fund. **Mr. Booker** said no, not until money was recovered from a responsible party. The money goes into the General Fund, which is the same thing as the disaster fund.

Closing by Sponsor:

REP. MCCULLOCH noted that the money that goes back into the disaster fund is only the amount of money recovered from entities

found guilty of causing the disaster. He urged support of HB 630.

HEARING ON HB 670

REP. RANEY said HB 670 is a bill by **REP. FRITZ DAILY** to review hardrock mine reclamation bonds every five years. He noted **REP. DAILY** asked the committee to cancel the hearing or put the bill on hold because a similar bill already passed the House. The hearing on HB 670 was canceled.

HEARING ON HB 639

Presentation and Opening Statement by Sponsor:

REP. STELLA JEAN HANSEN, HD 57 - Missoula, said HB 639 will authorize the Department of Health and Environmental Services (DHES) to impose a late fee on delinquent license renewals for people who clean of septic tanks, cesspools and privies. The fee will help DHES and local health offices administer programs to ensure waste is being disposed of properly.

Proponents' Testimony:

Mitzi Schwab, DHES Food and Consumer Safety Bureau Chief, supported HB 639. **EXHIBIT 2** She submitted letters from city-county health departments supporting HB 639. **EXHIBIT 3**

Opponents' Testimony: none

Questions From Committee Members:

REP. RANEY asked if DHES will notify people of the change in the law. **Ms. Schwab** said yes. A late-fee penalty was implemented successfully in fiscal year (FY) 1990. It applied to more than 8,000 businesses, including food establishments, trailer courts, campgrounds and other public accommodations. DHES sent out a brightly colored notice with annual renewal forms, which provided 60- to 90-days advance notice. People will be told that this change is due to a new law that involves a late fee.

Closing by Sponsor:

REP. HANSEN said HB 639 is important in Missoula County. There are 35,000 people living in high-density areas outside city limits who are on septic tanks, which fail periodically. Because of the area's clay-like soil and subdivision activity, many residents have to have their tanks pumped once per month or every other month. This is a real concern.

HEARING ON HB 637

Presentation and Opening Statement by Sponsor:

REP. ARLENE BECKER, HD 91 - Billings, said HB 637 is an act that

requires prior notification of pesticide applications within the boundaries of incorporated cities and towns. The bill's intent is to enable people to avoid unnecessary exposure.

It applies to lawn-care pesticides, chemicals or biological substances designed to kill or control unwanted species of plants, weeds or animals. These substances are used in places people live, work, play and frequent in their daily lives. They are used in gardens and parks, and on lawns and golf courses. Exposure can be hazardous.

The bill does not apply to agricultural spraying and is not intended to prevent or deter pesticide application. It is to provide notification to people so they can take precautions. She submitted proposed amendments. **EXHIBIT 4**

Someone who intends to apply a pesticide would have to post a notice at least 48 hours in advance and leave it up for a certain period of time afterward. Signs would be available where the pesticide or chemical is purchased. When posting a notice would be difficult, such as for widespread spraying of fields, a public service announcement in the local newspaper, or on radio or television, would suffice.

Proponents' Testimony:

Greg Amsden-Haegele, Montana Public Interest Research Group (MontPIRG) Assistant Director in Missoula, said the federal government requires warning labels on all lawn-care pesticide containers. The labels make it possible for the person using the chemical to take proper precautions to minimize exposure to family members and pets. It doesn't help neighbors.

HB 637 extends a warning label to anyone who may be exposed. It does not prohibit or restrict pesticide use. It gives people information needed to make decisions about minimizing exposure.

In March 1990, the U.S. General Accounting Office released a report on the lawn-care pesticides industry that stated the Environmental Protection Agency (EPA) completed studies of bronchial effects of only two of 32 most commonly used pesticides. The EPA will not complete testing of the remaining 30 pesticides for another four to five years. It isn't known which pesticides are safe and which are not.

People have the right to know if they are being exposed to pesticides. HB 637 gives them that right in a simple and effective way. It doesn't require the committee or the state to decide which pesticides are hazardous.

MontPIRG would not support the bill if it would cost the state anywhere near $43,000, which the fiscal note indicates. It won't cost that much. MontPIRG contacted six states with similar laws to ask about cost. Five states said no fiscal notes were attached

to their right-to-know bills. The cost was so low, it was considered to be insignificant.

One state, Maryland, established an entire program, including regulations governing licensing, education, application guidelines, etc. The entire program cost $29,000, which is $14,000 less than the fiscal note attached to HB 637. Other states could implement pesticide right-to-know laws at no cost because the law merely establishes simple safety standards. He urged passage of HB 637.

Dana Hedapohl, St. Patrick Hospital in Missoula, provided testimony by way of a three-minute video. She said she was unable to be present at the hearing because she was in St. Patrick Hospital, suffering from a sensitivity illness from pesticide exposure. She supported any type of right-to-know legislation. **EXHIBIT 5**

Kristin Page, MontPIRG, read written testimony on behalf of **Cynthia Wilson, The Montana/Wyoming Chapter of the Chemically Hypersensitive. EXHIBIT 6**

She submitted written testimony from the following proponents:

Norma Grier, Northwest Coalition for Alternatives to Pesticides. EXHIBIT 7
Dr. Jonathan Patz, Missoula. EXHIBIT 8
Dr. Eric Kress, Missoula. EXHIBIT 9
Dr. Paul Loehnen, Missoula. EXHIBIT 10
Jill Haas, Missoula. EXHIBIT 11
Loreen Folsom, Missoula. EXHIBIT 12
Tom Peel, Missoula Neighborhood Network. EXHIBIT 13
Stephanie Anderson, Missoula. EXHIBIT 14
June Siple, Missoula. EXHIBIT 15
Deborah Tomas, nurse, Missoula. EXHIBIT 16
Sandra Perrin, Missoula. EXHIBIT 17
Kathleen Irwin, Missoula. EXHIBIT 18
Bonnie Wisherd-Brewer, Bonner. EXHIBIT 19
Donetta Klein, Missoula. EXHIBIT 20

She also submitted a petition with 15 signatures of people who supported HB 637. **EXHIBIT 21**

Linda Lee, Montana Audubon Legislative Fund, supported HB 637. **EXHIBIT 22**

Chris Kaufmann, Montana Environmental Information Center (MEIC), supported HB 637. She said the bill does not prohibit pesticide use. It will enable citizens to choose if they want or need to protect themselves from exposure. Opponents will say this is an inconvenient and expensive law. The Legislature often passes laws that are expensive and inconvenient for certain industries in an effort to protect the health and welfare of Montanans.

Owen Cox, UM Environmental Studies Graduate student, supported HB

637 for previously stated reasons. He said the cost to implement the law would be marginal. It is inconceivable that anyone using a pesticide to beautify a lawn or garden would object to this notification requirement.

Jim Barngrover, Alternative Energy Resources Organization (AERO), said AERO's board has not taken a position on HB 637, but the bill represents AERO's interests. The board believes in an informed citizenry. The bill may need fine tuning. He does not object to that. The intent of the bill is important.

Will Snodgrass, Missoulians for a Clean Environment, said that in 1988 he became very ill from pesticide spraying. He investigated pesticides and learned that urban use of pesticides exceeds agricultural use. With few exceptions, none of the chemicals has been tested for toxicity. HB 637 is about a person's right to know. He distributed handouts on pesticides and their effects. **EXHIBIT 23**

Opponents' Testimony:

John Bass, Lawn Master Spray Service and Association of Montana Turf and Ornamental Professionals (AMTOP), opposed HB 637. **EXHIBIT 24-25**

Doug Johnson, Cascade County Mosquito Abatement and Weed Control, opposed HB 637. He distributed written testimony and other information. **EXHIBIT 26**

Scott Selstad of Great Falls, AMTOP and owner of Lawn Ranger, said his policy is to always notify people by mail or telephone at least 48 hours before pesticide application. In six years, no one has ever asked to be notified in advance of spraying. The company would be happy to do it. A law isn't needed. A trend in the lawn- and tree-care industry is for technicians to come to the property and determine on the spot what is needed. If the technician has to return two days later, the window of opportunity for control could be lost. The same could be true for a homeowner with pests in a garden.

In the six years his company has been treating lawns, pesticide application has been reduced by more than 50 percent. This year the company will be implementing in three markets a technique in which pesticide use can be reduced by 90 percent over a period of time. It involves spot treatment. It is unreasonable to require a two-day delay. No one can expect the average homeowner to do that. He opposes the bill, not prior notification. The company would gladly provide prior notification to anyone who requests it. A registry would be a way to accomplish that.

Dennis Roberts, AMTOP and owner of ChemLawn in Billings, said he has been a licensed applicator for 18 years and has worked in five states. HB 637 is an unfair bill. It includes only incorporated cities, which involves about 56 percent of the

state's population. Proponents said there would be no costs and cited experience in 16 states. Those 16 states do not require prior notification. They provide notification after spraying. They use colored flags, which are of minimal cost to the state, along with a central registry. Anyone can ask to be notified.

HB 637 may cause more pesticides to be used. A homeowner may have to use two to three times the amount of pesticide to take care of a problem that could have been addressed the day it was discovered. People may apply pesticides when weather conditions aren't favorable because of posting requirements. He asked who would be responsible for vandalism to the signs and for taking them down. Signs could be a safety hazard to children and create liability problems. He urged the committee to consider other alternatives.

John Semple, AMTOP and **Executive Director of the Montana Aviation Trades Association (MATA)**, opposed HB 637. **EXHIBIT 27**

David Burch, Montana Wheat Control Association, opposed HB 637.

Brad Culver, President of Nitro-Green in Helena, submitted written testimony in opposition to HB 637. **EXHIBIT 28**

Forrester Davis Potter, ChemLawn Services Corp. in Columbus, Ohio, opposed HB 637 via a faxed letter. **EXHIBIT 29**

Questions From Committee Members:

REP. SOUTHWORTH asked if the effects of pesticides are known. **Mr. Roberts** said a lot of tests have been done. Opinions differ. **Mr. Barngrover** said the human body may be able to expel natural toxins, but many manmade toxins are fat soluble and store in the body.

REP. COHEN asked **REP. BECKER** if sprays for hornets and wasps would be covered under HB 637. **REP. BECKER** said yes. **REP. COHEN** said he has a garbage service. Drivers are occasionally attacked by hornets and wasps. They are equipped with sprays to protect themselves. He and family members have nasty reactions to bee stings. He asked if those sprays would be prohibited without 48-hour notification. **Mr. Amsden-Haegele** said he hadn't realized when the bill was drafted that such problems could arise. The intent of the bill is to deal with normal day-to-day pesticide spraying. He would be happy to have an amendment put in the bill to deal with emergencies. The bill is intended to address professional lawn-care spraying.

REP. COHEN asked if carpenters could also be excluded. **REP. BECKER** said yes. A person could respond to an emergency situation and not have to wait for the posting period.

REP. DOLEZAL asked who would determine if the situation were an emergency and who would be liable. **REP. BECKER** said the committee

is getting hung up on liability. The intent of the bill is to inform people. She recognized qualifications would exist under the Department of Agriculture to enforce it. But the purpose of the bill is to let people know about spraying ahead of time so that they can take precautions. The state needs to be reasonable.

REP. DOLEZAL asked if it were true that other states do not require prior notification, only post notification. **REP. BECKER** said most states require notification on the day of application. Some states have registries. People on the registry are notified ahead of time, but it costs money to be on the registry.

REP. RANEY said he understands the position **REP. BECKER** is in. He has terrible reactions to 2-4D himself. He was an applicator and understands the position applicators are in, especially counties. The window of opportunity when it is calm outside is when someone would want to spray. He asked how applicators, especially counties and weed control districts, can do their jobs if they have to post advance notice. **REP. BECKER** said she would like to propose an amendment to the time frame that says "at least."

REP. RANEY said the time to spray is when pests are discovered. **REP. BECKER** asked if **REP. RANEY** were suggesting same-day spraying, or that applicators wouldn't know which day their spraying would be done. **REP. RANEY** said he isn't saying either. He is presenting questions posed by opponents that need to be resolved. In areas like Great Falls, Livingston and Browning, where the wind blows most of the time, applicators have to spray when the opportunity presents itself. He asked how that can be addressed. He asked what good notification would be if a sign is posted 48 hours in advance, and six days later the wind is still blowing. **REP. BECKER** said most people know the primary time for spraying is from the end of May to the end of August. Public service announcements could be made. She is not adverse to reducing the 48-hour requirement to 24 hours, but there must be some advance notice. People have to have the opportunity to take their children and animals inside.

Closing by Sponsor:

REP. BECKER said the bill started out simple and has become very complicated. Most opponents implied they take precautions. Many companies have established registries and employees take personal precautions. The committee needs to consider why only a certain group of people should be protected. Everyone should have a right to know and to take precautions if they want to. She is willing to look at the notification time frame, but prior notification is important.

Much of the opposition relates to technical difficulties. Technicalities, such as who will post the signs and who will take them down, can be overcome. The fiscal note is high because it was assumed complaints would increase, which would prompt more investigations. There is no evidence that complaints will

increase because of prior notification. Even if they did, the committee should consider whether that outweighs the public's right to know and to be safe. She urged passage of the bill, noting she would be willing to work on the technicalities.

HEARING ON HB 607

Presentation and Opening Statement by Sponsor:

REP. RANEY, HD 82 - Livingston, said the committee passed a bill that controls hazardous waste after it leaves the transportation system and enters a disposer's property. The state controls how it is stored and, provided that bill passes, will control it all the way through the incineration process. The state won't control emissions, which is what HB 607 is about. The bill extends permit requirements to hazardous waste incinerators and provides stricter controls.

Proponents' Testimony:

Charles Homer, DHES Air Quality Bureau Environmental Specialist, supported HB 607. **EXHIBIT 30**

Dave Anderson, Jefferson County Commissioner, said he supports HB 607 for the same reasons he supported HB 383.

Opponents' Testimony:

Ms. Kaufmann opposed HB 607. She said she approves of adding hazardous waste incinerators to regulations. She opposes the bill because subsection 3 on Page 3 was deleted. The Department is having difficulty dealing with the negligible risk factor. The Legislature should give the agency more direction, not eliminate a risk from the bill. There should be either a risk-base or emissions-base standard. MEIC would be happy to submit an amendment that would have zero emission standard as the base.

Questions From Committee Members:

REP. TOOLE asked if it were possible to insert "best available control technology standard" as a way to make the bill more workable. That language could substitute for the deleted language. **Mr. Homer** said the Department decides what the best available control technology is at the time. If a standard is put in now, the agency would be required to constantly update it. The agency requires what is best at this point. In a year or so, if a better control device were available, that device would be required.

REP. TOOLE asked if that can be mandated and if the agency would then have rule-making authority to make whatever changes might be needed to adapt to the new technologies. **Mr. Homer** said that would be possible, if the committee wanted to insert a specific emissions requirement in the bill. Leaving it as is would enable

the agency to keep up better with changes in technology.

REP. RANEY told **REP. TOOLE** that subsection 3 at the bottom of Page 3 and the top of Page 4 will answer his questions.

REP. ELLISON asked if the agency requires the best available control technology when issuing a permit. **Mr. Homer** said yes.

REP. TOOLE said he wasn't sure the wording in subsection 3 is the best it can be.

REP. FOSTER asked **REP. RANEY** if he had proposed amendments to the bill. **REP. RANEY** said yes. **EXHIBIT 31**

REP. FOSTER asked for an explanation of the wording "one in one million." **Mr. Homer** said the standard is commonly used in determining health impacts.

Closing by Sponsor:

REP. RANEY closed.

EXECUTIVE ACTION ON HB 607

Motion: REP. DOLEZAL MOVED HB 607 DO PASS.

Motion: REP. RANEY moved to amend HB 607 to add a new paragraph c. **EXHIBIT 31**

Discussion: REP. FOSTER expressed concerns about the wording "one in one million."

REP. GILBERT asked if the language is standard on an application for an incinerator and a stack system. **REP. RANEY** said he asked DHES to insert this paragraph because he didn't like the fact that Section C had been deleted. He asked for language because negligible risk is not used or definable. During clean-up in Livingston, negligible risk had to be eliminated from things that needed better definition.

REP. GILBERT asked how the Department could determine a proposed incinerator would not cause an increase in the cancer burden in more than "one in one million." **Vic Andersen, DHES Superfund Section Supervisor,** said "one in one million" is an industry standard for estimating excessive risk. He is not well-versed on air pathways to comment on the second sentence, "resulting from lifetime exposure to direct inhalation of pollutants." Usually, all pathways are evaluated, be it ingestion, inhalation or direct contact, and risks are calculated based on various scenarios.

REP. WANZENRIED asked if the reason for deleting language on Page 3 and proposing an amendment is because the Department has trouble understanding how to implement or enforce what is in the stricken language. **REP. RANEY** said yes.

REP. WANZENRIED suggested the committee reinstate the language and allow DHES to use rules to define the risk. **REP. RANEY** asked **Jeff Chaffee, DHES Air Quality Bureau Chief,** for his suggestion. **Mr. Chaffee** said the agency attempted with the amendment to get a handle on what negligible risk was. It has been a problem to define it as permits are issued. It would be acceptable to the agency to do this through rule making. Some direction in a statement of intent or directly from the committee would be helpful in setting rules, if the committee agrees with the "one in one million" risk level. Language could be worked out through rule making.

REP. ELLISON asked if technology is available to get risks down to the proposed level. **Mr. Chaffee** said yes, but it is expensive. Some of the language for the amendment was borrowed from a California rule. Other states have this sort of regulation.

REP. RANEY asked for direction from the committee. **REP. ELLISON** said he would rather restore the deleted language.

REP. RANEY withdrew his motion to adopt the DHES amendment.

Motion: **REP. REAM** moved to amend HB 607 to reinstate the language and transfer rule making authority to the Department to implement it.

Discussion: **REP. RANEY** asked if the language would be put in the statement of intent. **REP. REAM** said he would ask **Mr. Sihler.** He thinks a paragraph is needed on rule making authority.

REP. RANEY clarified the motion. He said the motion would first reinstate stricken language on Page 3, Section C, Lines 16 through 19; and second, would allow DHES, for the purpose of Section C, to define negligible risk through rule making.

Vote: Motion to amend HB 607 carried unanimously. Reps. Knox and Hoffman were absent from voting.

Motion/Vote **REP. WANZENRIED MOVED HB 607 DO PASS AS AMENDED.** Motion carried unanimously. Reps. Knox and Hoffman were absent from voting.

EXECUTIVE ACTION ON HB 380

Motion: **REP. COHEN MOVED HB 380 DO PASS AS AMENDED.**

Discussion: **REP. RANEY** distributed a "grey bill" reflecting amendments adopted from last meeting. **EXHIBIT 32**

Gail Kuntz, EQC, said there are small technical problems in the grey bill that aren't reflected in the amendment. **REP. RANEY** said this is not an official grey bill. It is for committee information on the effects of the amendments.

REP. COHEN asked if it were necessary to move the additional amendments to make technical corrections. **REP. RANEY** said no. They will show up in second-reading copy. **Ms. Kuntz** said amendments No. 1-8 are correct. Problems are in the mark-up of the grey bill.

REP. RANEY asked what HB 380 does now that it is amended. **Mr. Andersen** said the amendments were worked out with Atlantic Richfield Co. (ARCO), Burlington Northern, Montana Power Co., and EQC staff. On Page 4, the definition of aquifer was broadened. On Page 5, Item 2, language related to clean-up priority was changed to make it a priority scheme for sites requiring remedial action. The Department is in the process of establishing priorities for the state's approximately 200 sites.

The definition in Section 3, Item B, was changed to focus on situations like the Berkeley Pit. Page 12, Item 2, clarifies that liable and responsible parties, not DHES, will investigate, clean up or do whatever remedial action is necessary. The other amendments are housekeeping-type items.

REP. WANZENRIED said there is no doubt there is a major problem in Butte. The EPA is not responding quickly. He asked if the state is putting itself into a confrontational situation with the federal government that it most likely will lose. He asked if the committee is putting ARCO in the position of having to act before the EPA has finished its feasibility study. **Mr. Andersen** said potentially. It depends on the state's action. Federal Superfund law supersedes state law. If the state had to order ARCO to address the Butte Superfund site, that potentially would put the state at odds with EPA. No actions can be taken on a national priority-list site unless approved by EPA.

REP. WANZENRIED asked if the state would be forced to wait until the feasibility study is done, or if the state can require clean-up to proceed, run the risk of having ARCO refuse, and end up with a lawsuit. **Mr. Andersen** said there would be some kind of legal battle. He doesn't know how it would come out or whether the state would have to wait for the feasibility study to be completed.

REP. WANZENRIED asked if the state will have a quicker time table than EPA based on the way the bill is drafted. **Mr. Andersen** said he doesn't know. EPA controls what happens on national priority-list sites. The state may be able to pressure all the players to be aware of the problems, but he doesn't think the state can force EPA to operate faster.

REP. WANZENRIED said the state may still be bound by EPA's intransigence to act even if the bill is passed, unless the state wants to risk having a lawsuit. **Mr. Andersen** said possibly.

REP. BROOKE asked **REP. DAILY** if he favors the Clark Fork Coalition's suggestion. **REP. DAILY** said yes. The coalition helped

draft the amendments and agrees with them. Another bill in process would raise all $10,000 fines to $25,000.

REP. FAGG asked who was involved in developing the compromise bill and if everyone agreed. **REP. DAILY** said DHES, EQC staff, Ward Shanahan from ARCO, John Fitzpatrick, Leo Berry, Kim Wilson and himself developed the compromise and all agreed. ARCO has since requested some changes. He studied ARCO's proposed amendments. It appears ARCO is trying to take itself off the hook. No one disagreed with the amendments until moments ago. He is happy with the amendments and isn't concerning himself with ARCO's amendments. He urged the committee to proceed.

REP. RANEY said ARCO's amendments could be addressed in the Senate or in committee, if desired. **REP. GILBERT** said there isn't enough time to consider ARCO's amendments. **REP. RANEY** said he prefers the issue be addressed in the Senate unless someone on the committee wants to address it now. The committee agreed to pass discussion.

REP. TOOLE expressed concern over lack of action by ARCO and EPA on the Butte pit. He said a message should be sent to express how serious the problem is. He urged the committee to pass the bill as amended.

REP. GILBERT said the EPA controls the situation and nothing can be done without EPA's approval. Neither the state nor ARCO has any control over what happens. The state is putting ARCO in an untenable position. ARCO will have to pay the fine but can't do anything about the situation. The state doesn't have a legal basis. This bill doesn't work. The state is punishing innocent people.

REP. ELLISON said he agreed with **REP. GILBERT's** comments. Maybe the state could contact Montana's congressional delegation to force action.

REP. BROOKE said she favors the bill. She too is concerned it may jeopardize the process and that the state may be exceeding its authority. The community worked hard and has nowhere else to turn for help. This bill may provide the momentum to get EPA to take action.

REP. DOLEZAL agreed with **REP. BROOKE.**

Vote: **HB 380 DO PASS AS AMENDED.** Motion carried 13 to 4, with Reps. Nelson, Knox, Gilbert and Ellison voting no. Rep. Hoffman was absent from voting.

EXECUTIVE ACTION ON HB 660

Motion: **REP. COHEN MOVED HB 660 DO PASS.**

Discussion: **REP. COHEN** distributed and reviewed several

amendments. **EXHIBIT 33**

He said this covers agricultural corporations and other kinds of businesses engaged in agricultural operations.

Motion/Vote: **REP. COHEN** moved to amend HB 660. Motion carried unanimously.

Motion/Vote: **REP. COHEN MOVED HB 660 DO PASS AS AMENDED.** Motion carried unanimously. Reps. Knox and Hoffman were absent from voting.

EXECUTIVE ACTION ON HB 586

Motion/Vote: **REP. FAGG MOVED HB 586 DO PASS.** Motion carried unanimously. Reps. Knox and Hoffman were absent.

EXECUTIVE ACTION ON HB 630

Motion: **REP. GILBERT MOVED HB 630 DO PASS.** Motion carried unanimously.

REP. RANEY noted HB 670 was canceled.

EXECUTIVE ACTION ON HB 639

Motion/Vote: **REP. TOOLE MOVED HB 639 DO PASS.** Motion carried unanimously.

DISCUSSION ON HB 637

REP. COHEN said some pesticide applicators indicated there were ways in which other states and communities have addressed the problem. **REP. BECKER** seemed amenable to amending the bill to meet some of those concerns. Maybe she should have some time to meet with those people.

REP. FOSTER said it seemed this matter could be handled by a local government through a city ordinance. **REP. RANEY** said that maybe the committee needs to provide in the statute that cities can do it by ordinance.

REP. TOOLE asked **REP. RANEY** what he thinks, given his experience with pesticide application. **REP. RANEY** said insect hatches must be dealt with immediately. Insects will be out of control if 48-hour notification is required. But the bill shouldn't just fall by the wayside. What these people are trying to do makes sense.

REP. DOLEZAL suggested county officials be contacted to see how the bill would impact their program. Maybe a compromise can be reached.

REP. ELLISON said opponents made suggestions that might work. This bill is unworkable. He suggested a registry be established

to notify hypersensitive people of upcoming spraying.

REP. BARNHART said that wouldn't apply to a neighbor. Individuals wouldn't have a list of people to notify. **REP. RANEY** asked who would keep the list. **REP. TOOLE** said the city-county health department. **REP. GILBERT** said that is part of the problem. The bill deals with application of all pesticides, whether controlled or uncontrolled, or whether they are being applied commercially or by individuals. The intention is great and the bill probably should be preserved. But it is totally unworkable as is. It leaves too many questions unanswered. Maybe something can be worked out if **REP. BECKER** works with opponents and others who would be affected.

REP. FAGG referred to AMTOP guidelines on prior notification, posting practices and information provided to customers. He suggested the information be shown to **REP. BECKER** to see if it is acceptable to her. Maybe this could be the compromise.

REP. REAM said he would like to pursue **REP. ELLISON's** suggestion for a registry. **REP. FOSTER** said the Montana/Wyoming Chapter of the Chemically Hypersensitive is developing a list of people in Montana who have this problem. This may be helpful.

ADJOURNMENT

Adjournment: 5:45 p.m.

Bob Raney
BOB RANEY, Chairman

Lisa Fairman /Bev Marshall
LISA FAIRMAN, Secretary

BR/lf

HOUSE OF REPRESENTATIVES

NATURAL RESOURCES COMMITTEE

ROLL CALL **DATE** 2-15-91

NAME	PRESENT	ABSENT	EXCUSED
REP. MARK O'KEEFE, VICE-CHAIRMAN	✓		
REP. BOB GILBERT	✓		
REP. BEN COHEN	✓		
REP. ORVAL ELLISON	✓		
REP. BOB REAM	✓		
REP. TOM NELSON	✓		
REP. VIVIAN BROOKE	✓		
REP. BEVERLY BARNHART	✓		
REP. ED DOLEZAL	✓		
REP. RUSSELL FAGG	✓		
REP. MIKE FOSTER	✓		
REP. DAVID HOFFMAN			✓
REP. DICK KNOX			✓
REP. BRUCE MEASURE	✓		
REP. JIM SOUTHWORTH	✓		
REP. HOWARD TOOLE	✓		
REP. DAVE WANZENRIED	✓		
REP. BOB RANEY, CHAIRMAN	✓		

CS05NATRES.MAN

10:30
2-16-91
TDB

HOUSE STANDING COMMITTEE REPORT

February 16, 1991
Page 1 of 1

Mr. Speaker: We, the committee on Natural Resources report that House Bill 607 (first reading copy -- white) do pass as amended .

Signed: _____
Bob Raney, Chairman

And, that such amendments read:

1. Page 2, line 6.
Following: "well."
Insert: "It is also the intent of the legislature that the department develop a risk assessment-based definition of the term "negligible risk" as used in 75-2-215(2)(c)."

2. Page 3, line 13.
Strike: "and"

3. Page 3, line 19.
Following: "~~environment~~"
Insert: "; and
(c) the department has reached a determination that the projected emissions and ambient concentrations will constitute a negligible risk to the public health, safety, and welfare and to the environment."

CLERICAL

USA F.

House Bill No. 607

Date: 2-16-1991

Time: 2 pm

MER
(Legislative Council Staff)

☑ S / H Standing Committee Natural Resources

(Chairman) Rob Carey Raney

☐ S / H Committee of the Whole

(Sponsor)

In accordance with the Rules of the Montana Legislature, the following clerical errors may be corrected:

Amendment # 3, in insert
" ... environment "

An objection to these corrections may be registered by the Secretary of the Senate, the Chief Clerk of the House, or the sponsor by filing the objection in writing within 24 hours after receipt of this notice.

10:30
2-16-91
HB

HOUSE STANDING COMMITTEE REPORT

February 16, 1991

Mr. Speaker: We, the committee on Natural Resources report that House Bill 380 (first reading copy -- white) do pass as amended.

Signed: _____
Bob Raney, Chairman

And, that such amendments read:

1. Title, lines 4 through 6.
Following: "REQUIRE" on line 4.
Strike: the remainder of lines 4 and 5 through "SUBSTANCES" on line 6
Insert: "IMMEDIATE ACTION TO CONTAIN, REMOVE, AND ABATE A RELEASE OF A HAZARDOUS OR DELETERIOUS SUBSTANCE AT CERTAIN SITES"

2. Title, line 9.
Following: line 8
Strike: "75-10-701,"

3. Page 4, lines 21 and 22.
Following: "formation" on line 21.
Strike: the remainder of line 21 through "use" on line 22

4. Page 5, lines 5 through 8.
Following: "shall" on line 5.
Strike: the remainder of subsection (2) in its entirety
Insert: "establish and implement a system for prioritizing sites for remedial action based on potential effects on human health and the environment."

5. Page 5, lines 16 and 17.
Following: "present" on line 16.
Insert: "to cause pollution of an aquifer: (i)"
Following: "at a"
Insert: "national priority list"
Following: "site"
Strike: "regulated under"
Insert: "as defined by"

6. Page 5, line 19.
Following: "96-510"
Strike: ", to cause pollution of an aquifer"
Insert: "; and
(ii) where mining has left an abandoned open pit as described in 82-4-336(5)"

7. Page 6, line 24 through page 11, line 22.
Strike: section 5 in its entirety
Renumber: subsequent sections

8. Page 12, lines 9 through 14.
Following: "shall" on line 9.
Strike: the remainder of subsection (2) in its entirety
Insert: "require any person liable under 75-10-715(1) to take immediate action to contain, remove, and abate a release of a hazardous or deleterious substance at a site described in 75-5-605(1)(b)."

10:30
2-16-91
JDR

HOUSE STANDING COMMITTEE REPORT

February 16, 1991

Mr. Speaker: We, the committee on Natural Resources report that House Bill 660 (first reading copy -- white) do pass as amended .

Signed: _____
Bob Raney, Chairman

And, that such amendments read:

1. Title, line 6.
Strike: "AN INDIVIDUAL"
Insert: "A PERSON"

2. Title, line 7.
Strike: "INDIVIDUAL'S"
Insert: "PERSON'S"

3. Page 1, line 15.
Following: "(1)"
Insert: "(a)"

4. Page 1, line 21.
Following: "hazard"
Insert: "or violate the laws governing the disposal of hazardous or deleterious substances.

(b) This part does not apply to the operation of an electric generating facility, to the drilling, production, or refining of natural gas or petroleum, or to the operation of a mine, mill, smelter, or electrolytic reduction facility"

5. Page 1, line 22.
Strike: "exclusion"
Insert: "exclusions"

10:30
2-16-91
TDB

6. Page 1, line 23.
Strike: "does"
Insert: "do"

7. Page 1, line 24.
Strike: "which"
Insert: "that"

HOUSE STANDING COMMITTEE REPORT

February 16, 1991

Mr. Speaker: We, the committee on Natural Resources report that House Bill 586 (first reading copy -- white) do pass .

Signed: _____
Bob Raney, Chairman

HOUSE STANDING COMMITTEE REPORT

February 16, 1991

Mr. Speaker: We, the committee on Natural Resources report that House Bill 639 (first reading copy -- white) do pass .

Signed: _____
Bob Raney, Chairman

EXHIBIT 1
DATE 2-15-91
HB 586

HOUSE BILL 586

TESTIMONY OF THE DEPARTMENT OF NATURAL RESOURCES & CONSERVATION

February 14, 1991

By request of the Department of Natural Resources and Conservation:
A Bill for an act entitled:

"An Act allocating power generation revenues generated at State Water Conservation Projects to repair and rehabilitate State Water Conservation Projects; authorizing the Department of Natural Resources and Conservation to transfer funds from the State Water Project Hydroelectric Project Power Generation Special Revenue Account and the Broadwater Replacement and Renewal Account for payment of debt service; amending Sections 17-7-502 and 85-1-510, MCA; and providing an effective date."

Purpose

The purpose of this bill is to provide a source of revenue to rehabilitate state-owned dams and to help pay the debt of the Broadwater Power Project.

Background

The Department of Natural Resources and Conservation owns 50 water projects--including 35 water storage facilities--that irrigate more than 400,000 acres, or approximately 12 percent of the total irrigated area in the state. Most of these water storage projects were constructed during the 1930s and currently do not satisfy all of the requirements under the state's dam safety law. The State of Montana may be liable for any damages caused by the failure of any dam. Estimates of potential damage from the failure of state-owned dams range from $400 million below the Tongue River Dam to $30 million below the Middle Creek Dam. These figures do not include the potential loss of life, the cost to replace the dams, or the loss of benefits created by the projects.

In order to divert a potential catastrophe, the Department has developed a four-step plan to rehabilitate these dams: (1) complete emergency repairs where needed; (2) rehabilitate the dam; (3) develop emergency action plans; and (4) continue a comprehensive inspection program. Funds to implement this plan are limited, however. Nearly all federal funding programs now require the state and the water

users to share the costs of water projects. This requirement, coupled with the limited ability of the state and the water users to pay for water projects, makes it difficult to finance the rehabilitation and repair of high-hazard, state-owned dams.

One potential source of revenue to help pay for the rehabilitation of state-owned dams is to retrofit state projects for hydroelectric power production and use the revenues from the sale of the power to rehabilitate the dams. The Broadwater Diversion Dam at Toston has recently been retrofitted with a hydropower unit. Other state-owned dams may also have the potential to generate power; however, there are no current plans for additional state-owned hydropower plants.

Implementation

House Bill 586 has three basic provisions.

(1) Establishes a "State Water Project Hydroelectric Power Generation Special Revenue Account," into which revenues from state-owned hydropower projects are paid. These revenues currently flow into the "Water Development State Special Revenue Account" and could fund agency operations and grants. The clear intent of the Department since 1977 and legislation since 1981 has been to allocate state-owned hydropower project revenues to the rehabilitation of state-owned dams.

The bill also provides that funds deposited in this account but not expended in any one biennium will remain in the account. Costs of rehabilitating all state-owned water projects exceed the future expected total revenues from the Broadwater Power Project; hence, if these revenues are not used in one biennium, they will still be needed in future biennia.

(2) Provides a statutory appropriation to pay--when needed--bond debt service for bonds sold to rehabilitate projects or to construct hydropower projects. A statutory appropriation would obviate the need for the legislature to process a specific appropriation for debt service each session.

(3) Provides a statutory appropriation to transfer funds from the "Broadwater Replacement and Renewal Account" when necessary to pay debt service on Broadwater Power Project bonds. This appropriation would be used in extreme cases when hydropower revenues would not be sufficient to pay debt service. This situation would likely only occur with very low flows in the early years of the project. This provision was anticipated in the bond resolution and could prevent coal severance tax proceeds from being used in these rare and unpredictable situations.

Ex. 1
2-15-91
HB 586

The Broadwater Power Project is likely to generate modest revenues during the first few years. Revenues should increase over time, however, as the cost of power increases. Based on average water flows, the project is expected to break even over the next two years and produce net revenues in the following years. The income from the Broadwater Power Project is deposited into several accounts, as shown on the attached chart.

EXHIBIT 2
DATE 2-15-91
HB 639

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

STAN STEPHENS, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

FAX # (406) 444-2606

HELENA, MONTANA 59620

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TESTIMONY ON HOUSE BILL NO. 639

A BILL FOR AN ACT ENTITLED: "AN ACT TO AUTHORIZE A LATE FEE FOR LATE RENEWAL OF A LICENSE TO ENGAGE IN THE BUSINESS OF CLEANING SEPTIC TANKS, CESSPOOLS, AND PRIVIES; TO ALLOCATE PROCEEDS FROM LATE FEES AND THE STATE'S SHARE OF ANNUAL LICENSE FEES TO FUND PROGRAMS TO ENFORCE THE LAWS REGULATING THE BUSINESS OF CLEANING SEPTIC TANKS, CESSPOOLS, AND PRIVIES; AMENDING SECTION 37-41-202, MCA."

The Food and Consumer Safety Bureau FCSB) of the Department of Health and Environmental Sciences (DHES) has administrative and enforcement responsibility of Septic Tank, Cesspool and Privy Cleaners regulated through 37-41, MCA and ARM 16.14.

The Department is requesting amendment of section 37-41-202, MCA to provide authorization to assess a late fee penalty of $25 when businesses cleaning septic tanks, cesspools and privies do not renew business license applications prior to expiration on a calendar year basis each December 31. In FY90 and FY91 90% of license renewals were delinquent prior to license renewal application. Approximately 15% of FY90 renewals were delinquent in July and 5% delinquent in November. Current program administration costs to complete the license application/renewal process for delinquent businesses through repeated renewal notices, communications, personnel time, etc. on a per applicant basis far exceeds the $5 portion of the $25 license the state currently receives. Implementation of a $25 late fee assessment in FY90 with other licensed establishment programs administered by the FCSB has been successful in reducing delinquent license renewal applications by an estimated 50%.

Provision for deposit of the state portion of the license fee ($5) and any assessed late fee penalties of $25 into an account in the state special revenue account would assist program administration and enforcement funding from revenues generated by the program. The fund would be allowed to build during FY92 & FY93 as a program development funding source which would be requested through the next biennium budgeting process. The request will include provisions for program analysis with verification of actual waste disposal occurring at approved county locations and the ability to obtain compliance as necessary.

An immediate benefit to local health departments will be identification of licensed cleaners operating and disposing within local jurisdictions on a timely basis. The Department requests the Committee to favorably consider this bill and give it a "do pass" as written. Thank you.

Respectfully submitted,

Mitzi Schwab, Chief
Food and Consumer Safety Bureau
Telephone: 444-2408

EXHIBIT
DATE 2-15-91
HB 639

1 of 8

County of Yellowstone

CITY-COUNTY HEALTH DEPARTMENT

POST OFFICE BOX 35033
BILLINGS, MONTANA
59107

February 14, 1991

Mitzi Schwab, Chief
Food & Consumer Safety Bureau
State Dept. of Health and Environmental Sciences
Cogswell Building
Helena, MT 59620

REFERENCE TO: HB 639-LATE FEE FOR LICENSE TO CLEAN SEPTIC TANKS, CESSPOOLS, AND PRIVIES

Dear Ms. Schwab:

The Yellowstone City-County Health Department is in support of H.B.639. The Yellowstone City-County Health Department requests approval of H.B. 639 by the House Natural Resources Committee.

Sincerely,

Ted Kylander

Ted Kylander, R.S.
Program Manager
Environmental Health Div.

TK/nk

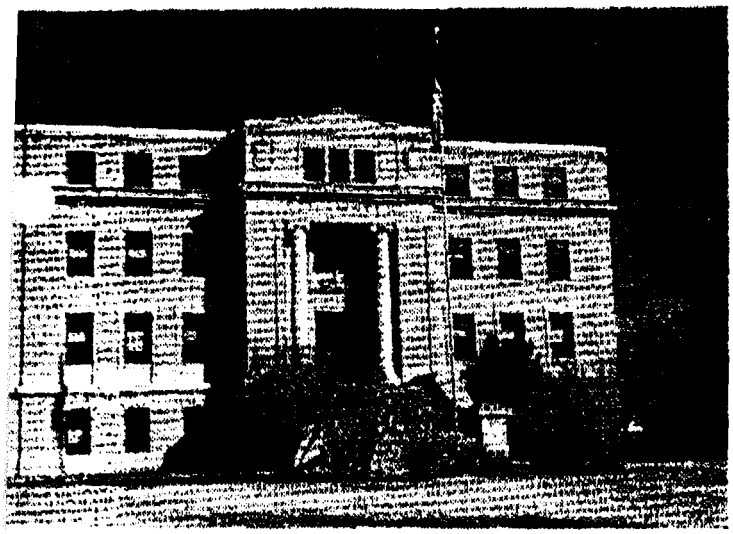


EXHIBIT
DATE 2-15-91
HB 639 2 of 8

COUNTY OF STILLWATER
STATE OF MONTANA

COLUMBUS, MONTANA

February 15, 1991

Mt. House of Representatives
Natural Resource Committee
Capitol Building
Helena, MT 59620

Subj: HB-639
Late Fee/License to Clean Septic Tank

Written Testimony

Mr. Chairman & Members of the Committee:

Our behalf of Stillwater and Sweetgrass Counties we urge your support of HB-639 providing for a late fee for licensed septic tank cleaners and pumpers.

The bill will encourage the licensees to apply at the proper time of the year and further provide for a timely recovery and distribution of the monies by the Food and Consumer Safety Bureau.

Delays in the past have created an administrative and budgeting problem for both the Bureau and the Counties. By encouraging prompt payment will reduce if not eliminate these problems.

Sincerely,

Rodney Fink

Rodney Fink R.S.
County Sanitarian

RF/vu

EXHIBIT 3
DATE 2-15-91
HB 639 3 of 8

DISTRICT SANITARIAN
RICHLAND AND McCONE COUNTY HEALTH DEPARTMENTS

221 5th St. S.W. Sidney, MT 59270 Phone: 406 482-2207

MEMORANDUM

TO: Bob Gilbert (R) - Sidney

FROM: Kelly Logan, R.S.

DATE: February 15, 1991

SUBJECT: HB 639 - Late fee for septic tank pumpers license.

Please support HB 639 which assesses a late fee for a license to clean septic tanks, cesspools, and privies. This bill would encourage timely renewal of septic tank pumper licenses and would enable the Department of Health to get complete licensing information to local departments earlier in the year.

In Richland County we do have septic tanks pumpers from out of state that operate in the county and occasionally local operators delay in obtaining their licenses. Current licensing information would help this department to determine which operators are in compliance with the law.

Please relay this information to other members of the House Natural Resource Committee.

MISSOULA COUNTY
MISSOULA
301 W. ALDER
MISSOULA, MONTANA 59802
(406) 721-5700

EXHIBIT 3
DATE 2-15-91
HB 639

Testimony for House of Representative's
Natural Resources Committee
for H.B 639

Chairman, Members of the Committee:

My name is Jim Carlson. I am the director of Environmental Health for the Missoula City-County Health Department.

The Department supports H.B. 639., a bill which allows a late fee for licensed septic tank pumpers who do not renew their license on time. Effective administration depends on efficient and timely licensing. No incentives are now in place to make pumpers responsible for payment of a $25 annual fee. Enforcement costs are exorbitant without an incentive such as this fee provides.

Other licensed facilities such as food purveyors, trailer courts and public accommodations have late fees and this mechanism has been shown to be effective in promoting prompt payment.

Your consideration in passing this bill is appreciated.

Sincerely,

Jim Carlson

EXHIBIT 5
DATE 2-15-91
HB 639 5 of 8

LEWIS AND CLARK
CITY- COUNTY HEALTH DEPARTMENT

City-County Building
316 North Park
Box 1723
Helena, Montana 59624
Telephone 406/443-1010

February 14, 1991

Montana House of Representatives,
Natural Resources Committee
Capitol Building
Helena, MT 59620

Re: House Bill #639 - Late Fee For License to Clean Septic Tanks, Cesspools and Privies.

Mr. Chairman and Members of the Committee:

The Lewis and Clark City-County Health Department fully supports House Bill #639 as it is currently written. The addition of a late fee to the current licensing requirements will encourage early renewal applications. This will help increase the efficiency of the licensing bureau. It will also help the counties by assuring timely payment for services rendered by the counties in inspecting and approving disposal sites.

Sincerely,

Robert R. Johnson

Robert R. Johnson
Health Officer
Lewis and Clark County

RRJ/jm

(S) HB639.LF

DATE 2/15/91
HB 639 6 of 8

Flathead City-County Health Department

723 5th Ave. East • Kalispell, Montana 59901
Environmental Health Services 756-5632 • Community Health Services 756-5633

DATE: February 15, 1991

TO: House Natural Resources Committee

FROM: Joe Russell, Health Services Coordinator

TESTIMONY: HB 639

In accordance with the position statement of the Flathead City-County Board of Health adopted January 17, 1991. The Board fully supports the proposed legislation introduced as House Bill 639 which will establish a late fee for late renewals of licenses established to regulate "septic tank pumpers" and the disposal of septage. This legislation, if adopted, will increase the accountability of the people engaged in this business and increase revenue to state and local health departments to support regulation and enforcement.

Although we support this bill, it should be noted that the license fee presently in place in no way covers the time spent to administer this program. If variables such as: time spent evaluating sites; the public health risk; and the potential degradation of the environment are considered, the established license fee falls well short of meeting these criteria. We have septic tank pumpers in this county that have well over 5 sites used for septage disposal. We evaluate each site and may conduct multiple evaluations on a given site within a year.

In conclusion, the Flathead City-County Board of Health supports House Bill 639.

Respectfully submitted,

Joe Russell, R.S.
Environmental Services Coordinator

testimon
2-15-91

2/15/91

HB 639 7 of 8

Flathead City-County Health Department

723 5th Ave. East • Kalispell, Montana 59901
Environmental Health Services 756-5632 • Community Health Services 756-5633

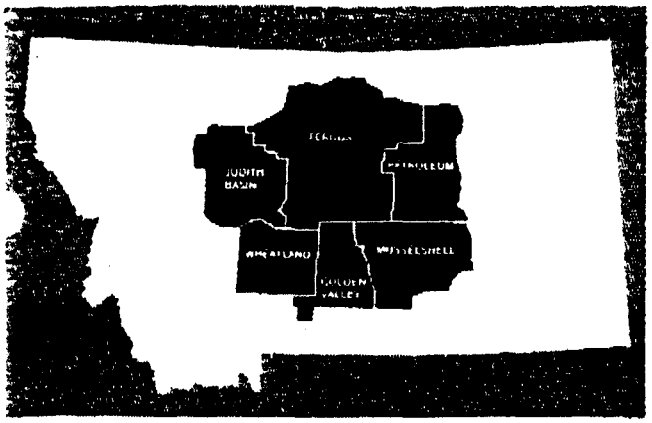
ADOPTED JANUARY 17, 1991

The Flathead City/County Board of Health supports legislation that continues coordination of all Public Health Services. This includes continued single-site organization of Personal, Community and Environmental Health Services and the resources and support services necessary for these programs and services.

The Flathead City/County Board of Health supports legislation that will enhance environmental quality and protect the public safety including the areas of Waste Management, Air and Water Quality , Subdivisions, and Underground Storage Tanks.

The Flathead City/County Board of Health supports legislation which will enhance the provision of Personal Health Services through a coordinated delivery plan. Such services would include basic immunization and disease prevention programs, nutrition services for families, family planning services and other basic Public Health Programs for our citizens regardless of ability to pay.

The Flathead City/County Board of Health supports those programs that will positively benefit the Public Health , protect the Public Safety and enhance the environmental quality of the State and support adequate funding of those programs and services by the State or through authorization of such mechanisms to local units of government that they can be adequately funded at the local level.



Central Montana Health District

Sanitarian's Office

2/15/91
HB 639

404 Fourth Avenue South Lewistown, Montana 59457

Telephone 406/538-7466

8 of 8

- Fergus
- Golden Valley
- Wheatland
- Musselshell
- Petroleum
- Judith Basin

EXHIBIT 3
DATE 2-15-91
HB 639

February 14, 1991

Representative Bob Raney
Chairman, House Natural Resources Committee and Members
Capitol Station
Helena, Montana 59620

Dear Representative Raney,

I support House Bill 639 introduced by Stella Jean Hansen.

This bill would provide for late fees when people apply for a license to Clean Septic Tanks. It would provide incentive for individuals to license their business in a timely manner and assure funding for counties that are involved in their regulation.

Sincerely,

Kenneth F. Smith

Kenneth F. Smith, R.S.
Health Officer
Central Montana Health District
Lewistown, Montana 59457

KFS:jp

EXHIBIT 4
DATE 2-15-91
HB 637

Amendments to House Bill No. 637
First Reading Copy

Requested by Rep. Becker
For the Committee on Natural Resources

Prepared by Gail Kuntz
February 15, 1991

1. Page 1, line 18.
Following: line 17
Insert: "STATEMENT OF INTENT
A statement of intent is required for this bill to provide direction to the department of agriculture for enforcement of the requirements of [section 1] relating to notification of pesticide applications. Pursuant to the provisions of section 80-8-306(3), if the department receives a complaint that a person other than a licensed applicator has failed to comply with the notification requirements of [section 1] and the complaint constitutes the person's first alleged violation of [section 1], the department shall contact the person by telephone to discuss the complaint and to inform the person of the requirements of [section 1]. If the department receives a second complaint that a person has failed to comply with [section 1], the department shall investigate the complaint consistent with the department's existing procedures for responding to alleged violations of Title 80, chapter 8."

2. Page 1, line 21.
Following: "pesticide"
Insert: "to control weeds or insects or applying a pesticide"

3. Page 1, line 25.
Strike: "(3)"
Insert: "(4)"

4. Page 2, line 1.
Following: "beginning"
Insert: "at least"

5. Page 2, line 23.
Following: line 22
Insert: "(3) A unit of the state, federal, or local government, including a weed management district, mosquito control district, or other public entity, that applies or causes to be applied a pesticide over any portion of the land area within its jurisdiction that lies within the boundaries of an incorporated city or town shall provide public notice at least 48 hours prior to the intended application. Notice must be provided by publication of a notice in a newspaper of general circulation in the area where the pesticide application will occur and by a radio or television broadcast and must include:
(a) a general description of the area where the pesticide will be applied;

(b) the common or trade name and the chemical name of the pesticide to be applied;

(c) the date of the pesticide application; and

(d) the name of the unit of government or other public entity responsible for the pesticide application and the name and telephone number of a person who may be contacted by interested citizens."

Renumber: subsequent subsections

EXHIBIT 5
DATE 2-15-91
HB 637

WITNESS STATEMENT

NAME DANA HEDAPOHL (3 MIN VIDEO TESTIMONY) BILL NO. HB637

ADDRESS ST. PATRICKS HOSPITAL DATE FEB 15, 91

WHOM DO YOU REPRESENT? _____

SUPPORT X OPPOSE _____ AMEND _____

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

EXHIBIT 6
DATE 2-15-91
HB 637

Mr. Chair and members of the Committee:

Kristin Page will be reading my testimony as my own chemically poisoning has left me almost completely house bound. To walk into a room full of people, without adequate safeguards and preventative measures being taken first, could prove fatal for me. In the last five years, I have had between 50 and 60 life threatening episodes and my body can no longer take the damage those near misses have caused. However, if I thought my physical presence would insure the passage of this bill, I would have come.

EX. 6
2-15-91
HB 637

Testimony for HB137
Pesticide Right to Know

Submitted by

Cynthia Wilson

on behalf of

The MONTANA/WYOMING CHAPTER
of the
Chemically Hypersensitive
P.O. Box 301, White Sulphur Springs, MT 59645

Mr. Chair and Members of the Committee:

The Montana/Wyoming Chapter of the Chemically Hypersensitive is pleased to provide testimony on HB 637 which will provide people with the right to know what pesticides they may be inadvertently exposed to.

MWCCH is an information, education, and advocacy organization which focuses on the chemically injured and the health issues these people face. In addition, we are concerned with the issue of making sure others do not fall victim to the same poisoning we experienced.

This bill could not only help the chemically injured by informing them of potential health risks but may go a long way to prevent the accidental poisoning of others.

Over 16 million Americans are sensitive to pesticides according to studies conducted at the Serammune Physicians Laboratory in Reston, VA. Some 5 million people are so sensitive to carbamates, organophosphates, and halogenated pesticides that near fatal reactions can occur.

Montana has not been spared its share of pesticide poisoning cases either. There were 75 Burlington Northern railroad workers chemically injured from pesticide applications. While MWCCH has over 100 members, only 9 are former railroad workers. However, our statistics are showing close to 60% of the victims registered became ill from exposure to pesticides. Many victims are ranchers and farmers who are having a hard time accepting the fact they helped to poison themselves. They just didn't understand that pesticides are really that dangerous.

The Environmental Protection Agency, the Office of Technology Assessment, and the Agency for Toxic Substances and Disease Registry have clearly established that pesticides can

6
2-15-91
637

do sever neurologic, central nervous system, and immune system damage from being inhaled, ingested, or absorbed through the skin. Because most chemicals are so readily absorbed through the skin, the risk from toxic clouds are of particular importance. It means the average person, even if wearing a mask to protect the lungs, can still be poisoned. In some cases, it takes less than .17 part per BILLION of a chemical in the air to start causing irreparable damage.

Also, the EPA has known for some time that 70% of all pesticides in use today have fraudulent animal safety test reports, but it lacks the funds to do anything about these abuses. Therefore, our only protection is the right to be informed on what we were being exposed to so that we can do our own risk assessments.

For many chemically injured victims knowing what they are being exposed to is no longer a matter of simple risk assessment. It's a matter of life and death. An unsuspecting chemically injured young woman of 19 walked into a restaurant in Great Falls that had installed a pesticide spraying device above the door. It worked and she almost died from anaphylactic shock. If she had known the restaurant had a pesticide sprayer, she would never have gone in there. Her lack of rights almost cost her her life.

The life style of the chemically injured is almost unimaginable to the average person. Therefore, it's not surprising that our needs are so often overlooked. It is hard for someone spraying a pesticide a mile away from my house to understand that if the toxic cloud drifts into my yard, he has put my life at risk. HB637 wouldn't matter if it was just my life he was risking, but he is jeopardizing the health of anyone who comes into contact with that chemical, especially children.

Children are far more susceptible to neurologic and immune system damage than adults because of their immature body systems and because these chemicals concentrate near the ground, below the 4 feet level.

We are not asking pesticide spraying be banned, but when toxic chemicals are used around populated areas, people have the right, the need, to know so they can take steps to protect themselves and their children.

The Montana/Wyoming Chapter of the Chemical Hypersensitive strongly urges passage of HB637.

Thank you.

EXHIBIT 7
DATE 2-15-91
HB 637

NORTHWEST COALITION for ALTERNATIVES to PESTICIDES
P.O. BOX 1393 EUGENE, OREGON 97440 (503) 344-5044

Written Testimony in Support of HB 367
by Norma Grier, Executive Director
Northwest Coalition for Alternatives to Pesticides
Eugene, Oregon
February 15, 1991

I am writing in support of HB 367, a bill requiring posting of signs for lawn care applications in the state of Montana.

The Northwest Coalition for Alternatives to Pesticides is a thirteen year old organization concentrating our efforts on educating the public about problems with pesticides and the alternatives to their use. Our membership is from every state in the United States, but two-thirds of our membership is concentrated in Washington, Oregon, California, Idaho, and Montana. We have program areas in forestry, ground water protection, urban pesticide use, roadside vegetation management, and agricultural use of pesticides.

The Need for Posting of Lawn Care Applications

There are many examples of individuals experiencing harm from exposure to lawn care pesticides, yet not knowing that they were being exposed at the time. Examples abound from many states across the continent. In fact, this issue was the topic of a 1990 U.S. Senate oversight hearing on lawn care chemicals.[1]

There are several clear examples of problems with exposure to lawn care pesticides. An incident from La Grande, Oregon is especially noteworthy, because it points to the need to post pesticide applications.[2] Several years ago, an asphalt paving company was contracted to pave a parking lot for a church located just uphill from and adjacent to a family's residence. The paving company applied the herbicide, prometone, prior to laying the asphalt. Through run-off, the herbicide moved onto the adjacent, downhill lawn and into this family's vegetable garden. In time, there was visible plant damage wherever the herbicide travelled.

This incident is important not just because of the clear damage to this family's lawn and plants. When the family suspected herbicide movement onto their property, they first found out what the herbicide was and then contacted the manufacturer of prometone. Because the herbicide was not

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HB 631

registered for use on root crops, the residents were told not to eat the root crops from their garden (e.g., carrots and onions).

Unfortunately, the family did not find out about this restriction until they had already consumed all of their garden onions. The family remains concerned about the long-term health effects they may experience from this exposure. Posting on the adjacent lot might have prevented this incident, as this family would have known that pesticides had been applied and could have made inquiries as soon as the posting was done.

A second incident is from Yakima, Washington and involves a child on a schoolground.[3] This incident occurred on public land, but it could just as easily have been a private yard. On February 27, 1989, a first-grader almost died after ingesting some "pinches" of granular disulfoton (Disyston), a highly toxic organophosphate insecticide. The disulfoton had been applied to the schoolgrounds under some trees when there was still snow on the ground. When the snow melted, the insecticide was exposed, and this curious boy and his classmates were attracted to what looked like "sand." This first grader spent two days "fighting for his life."

This near-fatal accident could have been avoided if the schoolground application had been posted. Children can be taught to recognize pesticide application posting signs and to avoid treated areas.

Posting areas treated with pesticides ensures that the public knows where applications have been made. Individuals then have the right to choose to avoid such areas.

At Least Eight States Have Acted on Posting Signs

At least eight states have taken action to post pesticide-treated areas.[4] As of January 1, 1989, the six states of Maine, Maryland, Massachusetts, New Jersey, New York, and Rhode Island have implemented regulations requiring commercial lawn care companies to post warning signs in residential areas after every chemical application. In most states, lawn care rules also apply to trees and shrubs. Two states, Connecticut and Iowa, were still in the process of finalizing posting regulations. Other states may have implemented regulations in the interim since 1989.

Here in the Northwest, the state of Washington is considering posting requirements for lawn care pesticide applications this legislative session.

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Posting of Warning Signs is Sound Public Policy

If lawn care pesticide application signs are posted, then the public can know where pesticides have been applied and take precautions to avoid unnecessary exposure. The public's right to know where pesticides are applied and right to consent to pesticide exposure must be guaranteed. Posting is a simple, cheap, and effective way to inform the public.

A vote in support of HB 367 would join Montana legislators with other policymakers across the nation who have supported posting of lawn care pesticide applications. A vote in support of this bill would underscore a shared vision for a commitment to the public's right to know.

Thank you for your consideration of this important matter.

Signed: Norma Grier
Norma Grier

References

1. U.S. Senate Subcommittee on Toxic Substances, Environmental Oversight, Research and Development. March 28, 1990. Oversight hearings on use and regulation of lawn chemicals. U.S. Senate.

2. Anonymous. 1989. Cove, Oregon tackles pesticides on the playground, Columbiana 3.1:58 and 60.

3. Riley, Becky. 1990-1991. "Mommy, I'm dying": Learning from a school pesticide tragedy. Journal of Pesticide Reform 10(4):2-3.

4. Weiss, Laura. April, 1989. Keep off the grass. Part II: An analysis of state regulations governing the commercial lawn care industry. Washington D.C.: Public Citizen's Congress Watch.

EXHIBIT 8
DATE 2-15-91
HB 637

Natural Resources Committee
House of Representatives
Montana State Legislature
Helena, Montana

Feb.,15, 1991

Dear Mr. Chairman and Members of the Natural Resources Committee,

I am writing in support of HB367 which requires notification of pesticide use. I am a Family Physician practicing in Missoula and Lolo, Montana and have many concerns in the area of public health.

I view this house bill as paralleling the Workers Right to Know Bill which was established several years ago. As a practitioner seeing patients on a daily basis, I realize the need for individuals to be aware of factors impacting their health. In the past I have found that patients become most upset when they learn of exposure to potential health hazards after the fact.

Preventive medicine is a crucial element in the practice of medicine today not only for the patient but for the beneficiaries of our health care system as well. With much research substantiating potential teratogenic as well as behavioral effects of pesticides, I feel that it is the public's right to know of exposure to this potential health hazard.

House Bill #367 does exactly this. By alerting the public to potential exposure to pesticides, individuals will at least be aware of possible health risks and choose their course accordingly. One may ignore posted signs, but at least signs should by posted.

Thank you for your time and consideration on this matter.

Sincerely,

Jonathan Patz , MD
644 Fred Burr Rd
Victor, MT 59875 (961-4140)

EXHIBIT 9
DATE 2-15-91
HB 637

FAMILY PRACTICE MISSOULA

631 West Alder
Missoula, Montana 59802
Telephone: 721-1850

DONALD R. NEVIN, M.D.
JUDY McDONALD, M.D.
ERIC J. KRESS, M.D.
TERENCE CALDERWOOD, M.D.

Diplomates, American
Board of Family Practice

February 14, 1991

Dear Mr. Chairperson and
Members of the Natural Resources Committee:

Re: House Bill 637
Pesticide Warning Bill

I am writing in support of House Bill 637 which would require reasonable warning be posted prior to using pesticides. Currently, the danger of pesticide use is a topic that is being hotly debated in the scientific literature. Some studies have shown an increase in learning disabilities, development of myopia as well as other medical problems. As a physician practicing in Missoula, I have seen several patients come to the office following pesticide exposure complaining of various skin rashes and breathing difficulties which appear allergic in nature. Until further study defines the risk or safety of these chemicals that have been impicated by many researchers to be dangerous, I believe that it is very reasonable to at least provide people ample warning to avoid pesticide exposure and I hope that you will all support this Bill.

Sincerely,

Eric J. Kress MD

Eric J. Kress, M. D.

EJK/ms

EXHIBIT 10
DATE 2-15-91
HB 637

C. PAUL LOEHNEN, M.D., P.C.
PLOMATE OF THE AMERICAN BOARD OF
TERNAL MEDICINE
PULMONARY DISEASE
CRITICAL CARE MEDICINE

601 West Spruce
Missoula, Montana 59802
(406) 728-5324

February 13, 1991

Chairman and Committee Members
Natural Resources Committee
Montana State Legislature

Dear Chairman and Committee Members:

I am writing as a proponent of House Bill 637. As a pulmonary physician, I am very sensitive to the effects of pollutants and potential harmful substances in the air we breathe. The average human being inhales approximately thirty pounds of air per day versus eating only three pounds of food. Thus, if there is a hazardous substance equally distributed in the air and in the food we eat, we ingest ten times as much of that material if it is disbursed in the air.

It took over forty years for us to finally recognize the harmful effects of asbestos exposure and an equally long time for us to recognize the harmful effects of tobacco use. Society and taxpayers are now paying dearly for the cost of the lung diseases induced by exposure to both asbestos and tobacco. Pesticides are complex and there are literally hundreds of chemical compounds and chemical reactions to which we are exposed. The exact medical impact of this is undefined and will take many years to clarify, if ever. Because these substances are definitely potentially harmful and in a number of instances, have been proved to be harmful, I think it is only prudent to inform the public at large regarding an area in which these pesticides are present. I thus think it is only common sense and socially responsible for appropriate signs to be placed in any area where these known and potential toxins are suspended in the air that we breathe.

Yours Sincerely,

C. Paul Loehnen, M.D.

CPL:bp

EXHIBIT 11
DATE 2-15-91
HB 637

February 13, 1991

Natural Resources Committee
Montana State Legislature
House of Representatives
Helena, Montana

To the Chair and Members of the Committee:

I am writing to urge a YES vote on House Bill 637. This Bill will require public notification within a neighborhood prior to, and after, pesticide spraying has occurred.

I strongly support this pesticide warning bill primarily for the attention it gives to the health and protection of children.

Montana has a strong tradition as a state which provides a high quality environment for families. To raise children in a community which is safe, uncongested, unpolluted and environmentally aware represents an ideal for which millions of families all over this country strive. Here is an opportunity for the State Legislature to reaffirm this value for Montana, to progress forward with it, and to continue building Montana's image as an environment that cares about its citizens and its neighborhoods, right down to the detail of protecting the most vulnerable of its resources - our children - from the myriad ill effects of toxic sprays.

This bill represents a reasonable, decent, appropriate and desir able piece of legislation. Passage of this bill demonstrates your commitment and accountability to a vital, yet grossly overlooked, public health concern.

Very truly yours,

Jill B. Haas

Jill B. Haas
616 Whitney Lane
Missoula, Montana

EXHIBIT 12
DATE 2-15-91
HB 637

442 Kensington
Missoula, Montana 59801
February 14, 1991

Chairman
House Natural Resources Committee
Montana State Legislature
Helena, Montana 59601

Dear Chairman and Members of the House Natural Resources Committee:

I am writing this letter to strongly support HB 637 which would require notification prior to pesticide spraying. In general, I feel that it is the right of every individual to know that his immediate environment will be sprayed so that he may make the decision (for himself and his family and pets) to vacate the area if he so desires. Particularly, I wish to inform you that I was a victim of ambient spray from a commercial tree spraying service and suffered flu-like symptoms (along with some of my neighbors, including two small children). In this case, I was not notified that the spraying would take place and had no chance to protect myself from exposure to this poison.

There is increasing evidence that pesticides (here I would include poisons that kill both animal and plant life) are harmful to human organisms, with the degree of harm apparently proportional to the size of the person. Thus, children and fetuses are more at risk than are grown persons. Parents and expectant mothers should especially have the opportunity to protect their children (born and unborn) from these toxic substances.

I urge your support of this bill for the increased health of us all.

Sincerely,

Loreen Folsom

Loreen C. Folsom

EXHIBIT 13
DATE 2-15-91
HB 637

February 14th, 1991

Tom Peel, President
Missoula Neighborhood Network
202 Hickory
Missoula, Montana 59801

Natural Resources Committee
House of Representatives
Montana State Legislature
Helena, Montana

RE: HB 637

Dear Chairman and Members of the House Natural Resources Committee:

We are grateful for this opportunity to present written testimony in support of HB 637 relating to the posting of pesticide caution signs where such chemicals are used in cities and towns.

As citizens and parents we are deeply concerned about the now well-known dangers to our community and its children posed by present practices of pesticide use. Our concern has grown as information regarding pesticide danger appears throughout the communication spectrum, including water quality reports, public health journals, newspapers, periodicals, epidemiology studies, public workshops, and television documentaries.

It is now abundantly clear to us as parents, workers, and professionals that the continued careless use of pesticides, applied with little or no warning to citizenry, constitutes a major threat to public health; children who are unwittingly exposed to these chemicals appear to be at greatest risk.

We believe that the people of Montana are aware, at the deepest level of conscience, of the real costs to this land and its inhabitants where industry has operated with profit motivation as its major driving force. While the profit motive makes a contribution to our delicately growing economy, in this case public safety factors should take precedence in order to prevent hazards to health and possible future litigation against applicators, including public agencies.

The Missoula Neighborhood Network strongly supports HB 637 as measured legislation serving to protect public health. This is, after all, a basic public health issue.

Sincerely,

Tom Peel
406-728-7999

EXHIBIT 14
DATE 2-15-91
HB 637

February 13, 1991

FROM: Stephanie Andersen
2319 Hillview Court
Missoula, Montana 59803

TO: The Natural Resources Committee
Montana House of Representatives
Helena, Montana 59601

Dear Chairer and Members of the Nautural Resources Committee:

I am a strong proponent of HB637 which requires the posting of signs in public areas where harmful chemicals are used. I am supporting this house bill both because I believe I have a right to know when and where these chemicals are being used and because I personally have an allergic reaction to such chemicals.

Withholding this information from me or people like me can cause an unhealthy situation. But if the area is posted, I can avoid contact with these chemicals or their residues.

Sincerely,

S. Andersen

Stephanie Andersen

DATE 2-15-91
HB 637

717 Defoe
Missoula MT 59802
Feb. 14, 1991

Natural Resources Committee
House of Representatives
Montana State Legislature
Helena MT 59620

Dear Mr. Chairman and Members of the Natural Resources Committee:

I am writing to express my support for passage of House Bill #637, a "right to know" pesticide application law.

Two years ago I was a victim of sloppy spraying procedures by a licensed sprayer here in Missoula. A "Right to Know" law would have prevented the incident. After the Missoulian published my letter to the editor about the spraying, I received about a dozen calls and letters from victims of other "mishaps," most of which were supposedly regulated sprayings (i.e. commercial sprayers, the State of Montana as overseer). Properties were being sprayed without permission, some people had been directly exposed to toxic sprays, or they were aware that the public is being exposed without their knowledge or consent. My personal conclusions, after a great deal of research, is that first of all, the state regulators are not empowered enough to do their job. They are understaffed, spread too thin, and held down by a very strong chemicals industry. Further, the industry itself, including the sprayers, do not respect the toxicity of the chemicals they handle, they pay too small a license fee to practice, receive too little training annually, and exhibit an amazing disinterest in the natural cycles of the very pests they are supposedly trained to control, while not respecting other life forms they may impact (including human beings).

It is wrong when government places great emphasis on personal autonomy, while ignoring public health and safety. The public simply must be protected, especially when the party with a need to make money to support his family cuts corners with regulations to make money faster. A "right to know" law will not only protect the public, but will help protect employees of the sprayers from exposure to the toxic chemicals used in this industry. One of my contacts was with an employee of the industry who was not only concerned with employee exposure, but also public exposure.

In my particular case, I did not know my neighbor's tree was to be sprayed until I saw two men spraying near their unmarked truck at a curb near my house. They didn't even have the courtesy to knock on neighbors' doors to let people know they were about to spray. I had a ten-year organic garden, my toddler's diapers were hanging on the clothesline, his toys were in the yard. A steady breeze was blowing while the men sprayed - the most common violation of state regulations, I am told. Only one man protected himself with a mask.

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HB 637

I couldn't run outside to make them stop because I would have been sprayed. Later I learned they had used Diazinon, a potent spray they were using against the box elder leaf roller (on an already defoliated tree). I understand that they told their customers that it would not kill birds (it does), that the tree would die if not sprayed (a box elder? -don't make me laugh!). This was pure misinformation, according to the extension agent I consulted. These sprayers were simply trying to make a buck, while not being watched very closely by their regulators. This same company had side-stepped regulations the year before, committing a serious violation of state regulations when they used a spray not approved for urban use in an urban neighborhood. My understanding is that the company only received what amounted to a slap on the wrist by our state regulator. The sprayer's license should have been revoked.

My close encounter with Diazinon meant that I had to throw out $42.50 worth of diapers, and we had to avoid using our front yard that summer. We value clean and safe personal surroundings. The sprayers consider Diazinon to be "perfectly safe." In fact, had our young son been soaked in the spray he might have received what the industry terms a "50/50 lethal dose." Fortunately, he was taking a nap inside the house at the time of the spraying, and not playing in the back yard where the spray drift might have reached him. The sprayers did not make sure children were out of range, nor did they inform people that their cars might be sprayed. Diazinon is one of the mildest sprays available to commercial sprayers, I am told.

While I kept my son indoors the rest of that nice day, I saw a woman with a baby in a stroller wheel right through the recently-sprayed area. By the time I saw her it was too late to stop her. It brought tears to my eyes that neither the woman with her baby, nor I and my son had the "right to know" when and where the spray would be applied, nor what it was.

It is simply unhealthy and unfair to expose the public in this way. Missoula parks, up until last year, have been routinely sprayed without public notice, using very toxic chemicals to accomplish the dubious chore of killing dandelions. Droves of Moms with their babies and toddlers make use of the parks, spreading blankets, going barefoot, eating picnics on grass possibly sprayed only a couple of hours beforehand.

I believe the warning signs required by House Bill #637 will, first of all, protect the public from harm. Second, they will be an aid to the state regulator by providing the eyes and ears of the public to help watchdog the spraying industry. Third, a very real spin-off of this law will be an increase in public confidence in commercial sprayers. At the moment we feel like no one is watching the store.

This really is a needed piece of regulation. Pass it, please.

Sincerely,

June J. Siple

EXHIBIT 10
DATE 2-15-91
HB 637

February 13, 1991

Deborah Tomas
930 Poplar
Missoula, MT 59802

House Natural Resources Committee
Montana State Legislature
Helena, Montana

Dear Chairman and Natural Resources
Committee members:

I lend my support to HB 637 which would require posted warnings to the public when chemical pesticides are being used in public areas. As a registered nurse, I have throughout my life concerned myself with issues related to public health. Few actions "for the public good" have such potential threat to the public good as the use of pesticides. This bill would at least provide information to people about where the chemicals have been used and where they will be used so that they might take precautions to avoid unnecessary contact. So small a service for so important a result!

I urge you to recommend to the Legislature "do pass" for this important bill.

Sincerely,

Deborah Tomas, R.N.

EXHIBIT 17
DATE 2-15-91
HB 637

Missoula, February 14, 1991

Natural Resources Committee
House of Representatives
Montana State Legislature
Helena, Montana

Dear Chairperson and Members of the Natural Resources Committee,

My name is Sandra Perrin and I have been a successful organic gardener all my gardening life. I am also the author of ORGANIC GARDENING IN MONTANA AND THE NORTHWEST.

I like you to know that I am in full support of H.B.637. It is a reasonable and cautious bill that protects the general public from being exposed unknowingly to pesticides. Thank you.

Sincerely,

Sandra Perrin

SANDRA PERRIN
302 Pattee Canyon Dr.
Missoula, Mt. 59803
Tel. 542-2017

EXHIBIT 18
DATE 2-15-91
HB 637

Kathleen C. Irwin
510 Florence
Missoula, MT 59801

February 14, 1991

Montana State Legislature
House of Representatives
Natural Resources Committee
Helena, MT

Dear Chairperson and Natural Resources Committee Members:

As a citizen concerned about pollutants and their effects on humans and the environment, I am writing to you to express my support of HB 637. It seems essential to me that all spraying in urban areas be publicized by means of the posting of warning signs that include the name of the product being used. This posting should include the marketing name as well as the chemical name of the product. I am concerned for myself, my child and all people and animals living in urban areas where sprayings occur. Please register my interest and support of HB 637.

Thank you,

Kathleen C. Irwin

Kathleen C. Irwin

EXHIBIT 19
DATE 2-15-91
HB 637

Feb. 14, 1991

Montana State Legislature
Helena, MT.

Attention Chairperson:

Please be advised that I favor the passage of House Bill 637 - Pesticide Warning Signs.

Everyone has a right to clean air and clean water. However, we can no longer take this right for granted. Pesticide residue is getting into our water supply and then into our food chain from fields and/or crops being sprayed by private and commercial applicators. Roadside spraying in cities and rural areas in Montana is doing more harm than good - there are alternatives!

It is not enough to expect private citizens to post "No Spray" signs - sometimes they are not observed, sometimes they are destroyed, etc., etc.. It is only prudent that the applicator be responsible for the potential danger to our health.

The advance and post notices stated in this bill (as well as the size), should be considered the minimum. Also, the signs should contain sufficient information as to the inherent ingredients of the pesticide being applied.

The time for complacency is over. Lets pass this bill, now, for Montana!

Yours truly,

Bonnie Wisherd-Brewer

Bonnie Wisherd-Brewer
RR 90, Bonner, MT 59823-9702

Phone: 406-244-5530 (8-9 AM)

cc:
Dept of Natural Resources and Conservation
Committee Members

EXHIBIT 20
DATE 2-15-91
HB 637

Donetta Klein
722 N. 4th W.
Missoula, MT 59802

February 14, 1991

Natural Resource Committee
Montana House of Representatives
Helena, MT 59604

Dear Mr. Chairman and Members of the Committee:

I am writing in support of HB637 which would require that, before applying pesticides and for seventy-two hours after application, a warning be posted to notify the public so those who want to can avoid the application site. Given the concerns about toxicity and the many studies that point to the dangers of pesticide exposure, this seems like little to ask of pesticide applicators in order to ensure that the public has a choice about pesticide exposure.

Because I suffer from multiple allergies and am highly sensitive to chemicals in the environment, I have a special interest in this bill. I have to be extremely careful about coming into contact with chemicals, and many other individuals suffer as I do and must also be extremely careful. The simple warning system proposed in HB637 would enable those of us who react violently to chemical exposure to greatly lessen our chances of exposure.

By requiring pesticide applicators to notify the public of their use of pesticides, the Natural Resource Committee would be addressing the issue of public safety and giving the public a choice about exposure to pesticides. For those reasons, I urge the committee to pass this bill.

Sincerely,

Donetta Klein

Donetta Klein

EXHIBIT 21
DATE 2-15-91
HB 637

February 13, 1991

Natural Resource Committee
Montana House of Representatives
Helena, Montana

Dear Chairperson and Committee Members;

We are writing to show our support for House Bill #637, a bill which would require anyone using pesticides out of doors to post warning signs in the area before, during and after the usage of those pesticides.

As health care providers and residents of the States of Montana, we believe in the public's right to be informed of potential risks to health. Direct links between pesticides and illness are controversial, however, we believe a person has the right to be informed of pesticide usage through the use of these warning signs so that he or she can make an informed choice to avoid unnecessary exposure if they so desire.

A big part of the reason that we all enjoy living in the State of Montana is of course the pristine environment and ability to have a healthy lifestyle. It is important to us that we can continue to maintain that quality in our lives.

Sincerely,

PROPONENTS:

NAME	SIGNATURE	ADDRESS
Darlene E. Schmid	Darlene E. Schmid RN	110 South Ave. W., Missoula, MT. 59801
LISA Guenther	Lisa Guenther	12 Charislane Msla, MT 59801
DOROTHY HOSHAW	Dorothy Hoshaw RN	207 TAKIMA DR MSLA MT 598[illegible]
Sharon Delaney	Sharon Delaney RN	531 Plymouth Msla MT 59801
SUSAN WHITTINGHILL	Susan Whittinghill RN	731 N. 5th W. MSLA, MT. 59802
Michelle Sokoloski	M Sokoloski RN	1611 Jackson Pl. Msla MT. 59802
Cindy Haumer	Cindy Haumer	105 Ben Hogan Dr. Msla, MT 5980[illegible]
Alice MARQUARDT	Alice Marquardt	519 Woodford Msla 59803
[illegible]	[illegible]	2205 [illegible]
Judy Dundas	Judy Dundas RN	6215 SawMill Gulch 59801
Daniel R. Schneider	Daniel R Schneider RN	541 E Sussex Msla MT 59801
SUSAN MOLGARD	Susan Molgard RN	720 Dickinson Msla 59802
Suzanne Julin	Suzanne Julin	7 Carriage Way Msla 59802
TERRY NORD	Terry Nord	P.O. BOX 648 MILLTOWN, MT 59[illegible]
R Jayne Haruch	R Jayne Haruch	733 W Sussex #1

EXHIBIT 22
DATE 2-15-91
HB 637

Montana Audubon Legislative Fund

Testimony on HB 637
House Natural Resources
February 15, 1991

Mr. Chairman and Members of the Committee,

My name is Linda Lee and I'm here today representing the Montana Audubon Legislative Fund. The Audubon Fund is composed of nine Chapters of the National Audubon Society and represents 2,500 members throughout the state.

Audubon strongly supports House Bill 637. There are currently more than 30 pesticides used in lawn care. Most of the pesticides used by private citizens have warning labels about their toxicity and users are expected to take precautions.

The problem is that someone may spray a tree that sits near my property and unless I witness~~s~~ the spraying, I won't be able to take any precautions. This is a concern for me, and a severe health threat for those people who are hypersensitive to these chemicals.

Diazanon is a pesticide that was banned from use in golf courses because it kills birds. It is still widely used. Would you want your son or daughter to go to a public park and climb a tree that had just been sprayed with diazonon? I wouldn't. Without a warning sign, we have no way of knowing the tree has been sprayed.

When a professional applicator applies a pesticide, he or she often wears protective clothing. The unknowing person has a right to protection too.

This is a simple bill. We all have a right to know about possible pesticide exposure. It would only be neighborly to post a sign to notify the people next door when I spray my my apple tree, and I would appreciate the city or town let me know when public property has been sprayed. Please vote a do pass on House Bill 637.

EXHIBIT 23
DATE 2-15-91
HB 637

Science Behind Pesticides

$50 Million and Thousands of Lab Hours

Getting a modern crop protection product from the lab to a farmer's field takes many years, millions of dollars and thousands of lab hours.

Only one in 25,000 chemicals tested makes it from the chemist's bench to the market. Inventing, testing and evaluating a pesticide can take from seven to 10 years, and costs an average of 30-50 million dollars before any sales occur.

Much of this research is required by law and regulated by the federal government through the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). All states require extensive research before they allow a compound to be used.

To obtain Environmental Protection Agency (EPA) registration, chemical testing follows two basic paths:

- Studies of a compound's environmental properties;
- Testing of its toxicological effects.

As well, companies conduct trials to determine how the product works, how well it works and if it could be commercially successful.

Toxicological and environmental tests are demanding. Safety research includes toxicity testing on representative organisms to see if a chemical could produce adverse effects. Companies also must prove the chemical breaks down, but not into potentially harmful by-products in the environment. As well, researchers must determine if the chemical accumulates in the food chain, leading to harmful effects as one organism consumes another.

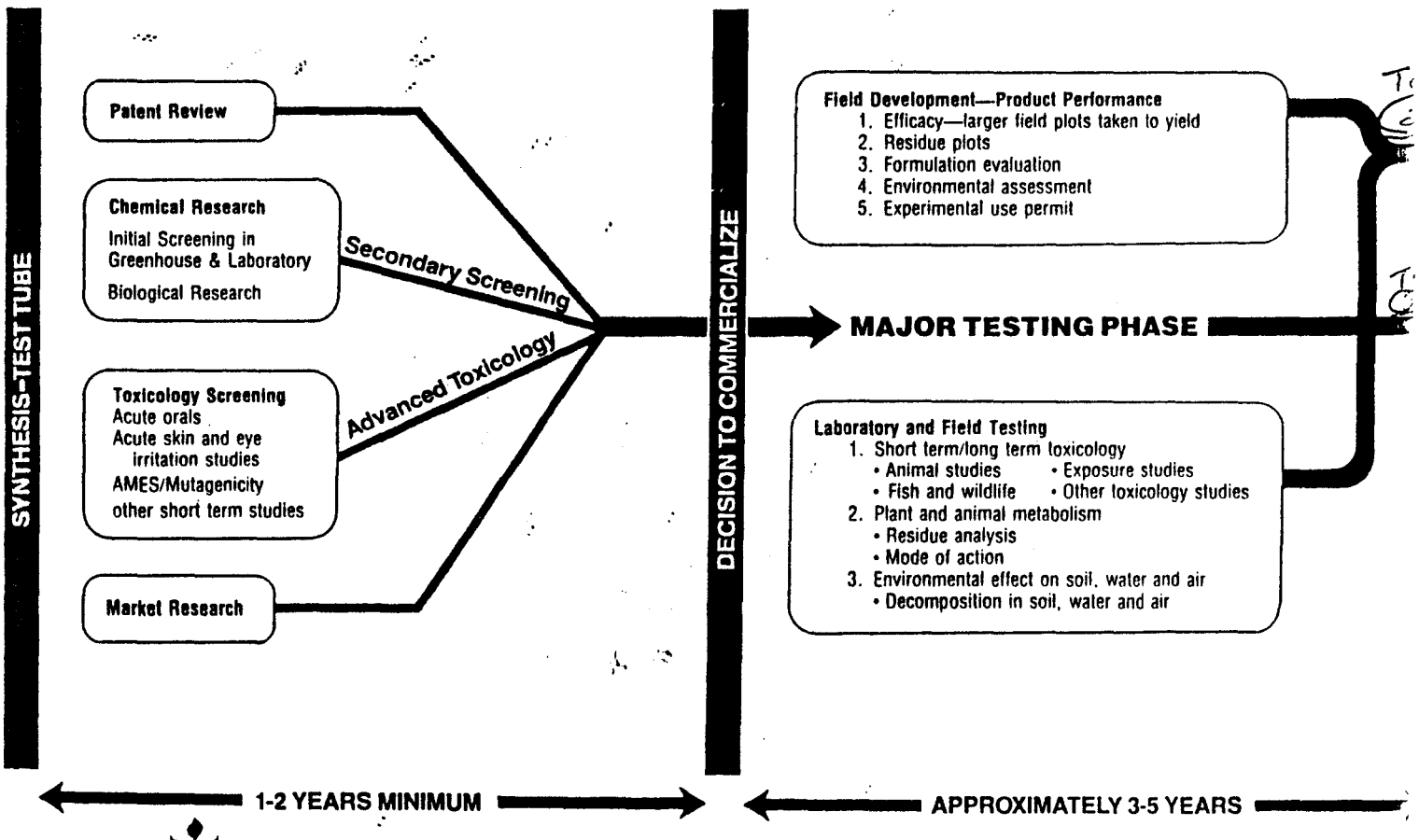
Researchers also study a chemical's potential to cause cancer, birth defects, mutations and adverse effects on the nervous system. Again, animal tests, usually with mice and rats, are commonly used to answer these questions.

Testing methods must follow rigorous government requirements to be credible. And labs must keep records and biological samples from each test segment so that the EPA can reconstruct the experiment. In addition, accredited labs are subject to government inspection to maintain their certification.

Once tests are complete, EPA scientists carefully review large amounts of data. The EPA can and often does ask for additional tests, extending the agency's review process over several years.

As well, for human food crops and livestock feed, EPA evaluates "tolerances" for chemical residues in the treated crop. To establish

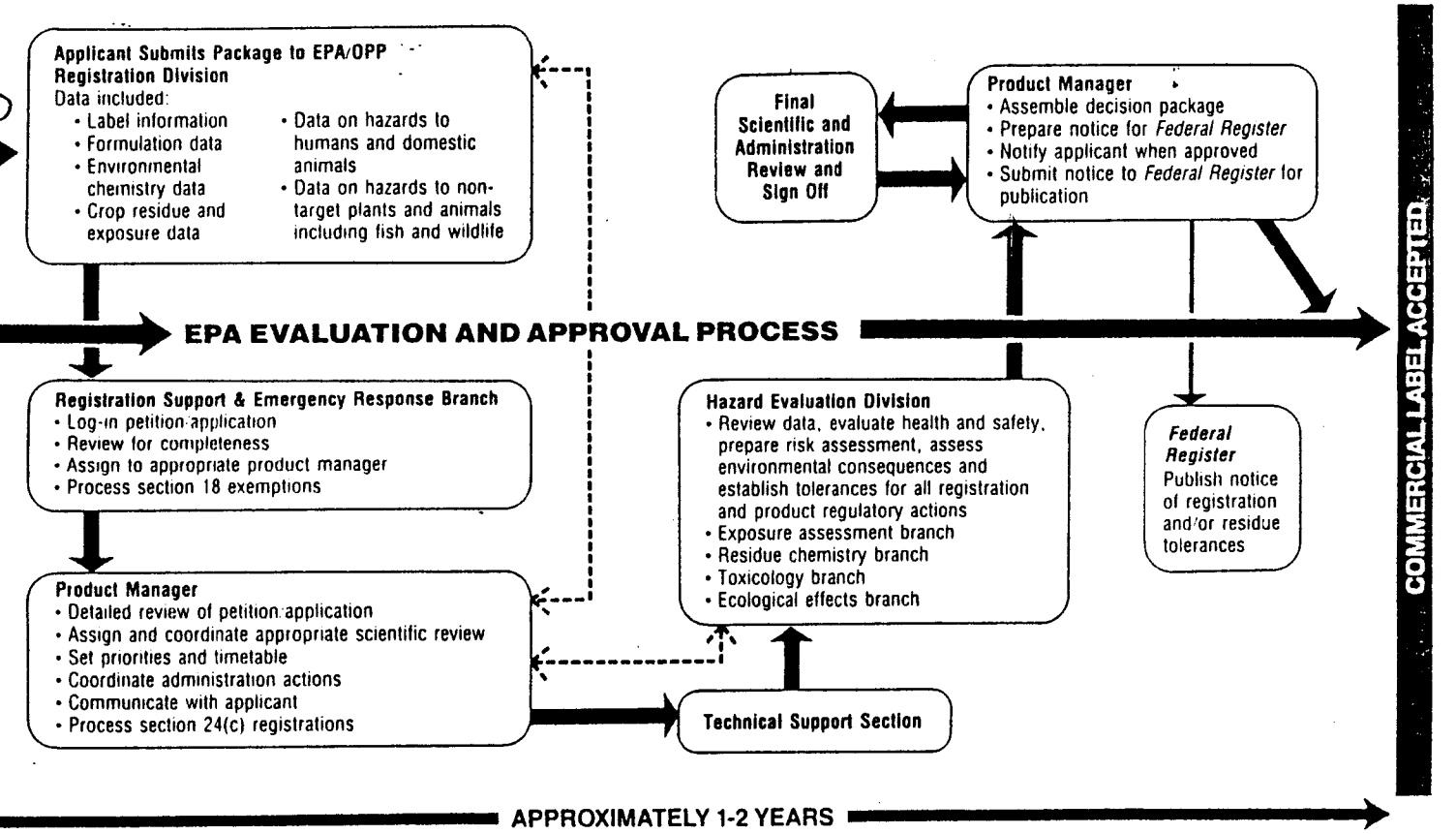
Continued on page 9



How It's Done

The steps taken to create a new, commercial pesticide are many and complex. Briefly, here are the major phases.

- Primary screening. Small amounts of chemicals are synthesized and tested in labs and greenhouses.
- Secondary screening. Promising materials undergo further testing in greenhouses and on experimental farms.
- Toxicological screening. One of the first steps taken, these tests assure chemical researchers' protection. An "Ames test" on bacteria quickly determines if the compound might cause genetic damage. Basic toxicology work necessitates animal tests. Compounds showing adverse effects are dropped.
- Patent search. Companies see if they can patent their discovery and look at markets and manufacturing processes.
- Initial commercial testing. Many studies are conducted over five to seven years. More intensive, long-term toxicological research is done. Wider environmental testing in the field, crops, labs and greenhouses occurs.
- EPA application. After several years in the commercial testing stage, companies submit a detailed data package of information on the chemical to EPA – the results of hundreds of studies on acute, chronic, reproductive, and developmental toxicity; ecological studies to determine harmful impacts on non-target plants and animals; and studies of environmental fate to determine the rate at which the pesticide is degraded to harmless components or whether it can be translocated to unwanted sites.
- EPA evaluation. Specialized EPA scientists examine the data, seek more information if needed, order further studies if required, and accept or reject the package.
- Labeling. If all is acceptable to EPA, it approves a "label" for the product. The label directs an applicator using the product. Applying products "off-label" violates federal law.
- Commercial introduction. A product must be labeled before a company may introduce it for sale in the United States. Only then can the company begin to recoup the millions it has invested in this process. And there is no guarantee it will succeed in a competitive marketplace.



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$50 Million *Continued from page 6*

these tolerance levels, field studies are used to determine how much chemical remains in the crop after application. Sometimes no residues remain at all. This information, when combined with studies on the compound's toxicity, help EPA set tolerances, which govern how the product is used.

Once again, caution rules the day. Scientists use toxicity data from the most sensitive species tested to define the "no observable effect level" (NOEL). They multiply the NOEL by a safety factor of up to 100 or more to help them arrive at an "acceptable daily intake" level or ADI. This represents how much residue can be ingested by an average person every day for a lifetime without ill effect. The ADI, or tolerance, is set at a level far below that which has no effect on the most sensitive test animal.

There's additional safety built into the scientific method for setting tolerances. When researchers conduct and evaluate crop residue studies, they use high chemical rates, harvest the crop at the shortest possible interval after treatment and assume all registered crops will be treated in the same manner – a highly unlikely and essentially impossible situation.

EPA also considers the dietary habits of special groups, such as children, to further ingrain safety into tolerance setting.

Essentially, EPA regulates pesticides up to the time that they enter the "farm gate." Certain pesticides fall into the "general use" registration category. Others fall into the "restricted use" category, meaning any person who will apply the product must pass an EPA applicator certification test. This ensures that registered products are applied correctly. When EPA grants a product registration, it sets standards for product use and residues allowable in food crops. After that, treated crops are considered food, and the U.S. Food and Drug Administration (FDA) takes responsibility for regulation.

In short, the FDA enforces the tolerances and works to ensure that the U.S. food supply is safe. It randomly tests produce and food samples for pesticide residues that may remain in food after production. Usually no residues are found and rarely do these samples exceed regulated tolerances. Typically, any residue violation is "technical" rather than "unsafe". In other words, there's no measurable health risk because EPA and manufacturers build such a broad safety margin into the testing, evaluation and tolerance-setting processes.

Public policy may eventually push the testing and regulatory process to meet even more rigorous requirements. But the system is extremely expensive and time-consuming now. And making standards even more stringent would be a difficult task, given the current level of intense scrutiny.

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Environmental illness: Does it exist?

The patient has numerous vague complaints, ranging from chills and vomiting to fuzzy thinking. What evidence is there for clinical ecologists' contention that our toxic environment is to blame?

EXPRESS STOP

The frustrated patient: The person who has been afflicted by numerous unexplainable symptoms may feel rejected or ignored by the medical establishment and may thus resort to an alternative form of treatment, such as by a clinical ecologist, where he or she may find the reassurance of the label of a physical diagnosis. Orthodox allergists and psychiatrists deny the existence of a multiple allergy syndrome based on chemical exposure and consider such symptoms largely somatization and without demonstrable basis.

The person who claims to have environmental hypersensitivity or multiple allergy syndrome believes his or her vague, chronic symptoms result from low-level chemical exposure and resulting immune suppression. Available data indicate that this is not a true syndrome, but a framework for interpreting symptoms that are not necessarily related and are often somatoform. The framework is based on the premises of clinical ecology (see "An overview of clinical ecology," page 42).

This is not the person with chronic complaints who simply does not feel well, nor is it the person who has encountered true toxic exposure and is experiencing the aftereffects. This person is frustrated because of chronic illness and sees his therapeutic options running out. Consultation with a clinical ecologist may have been a last resort, when the medical establishment appeared to him to be neither interested in his difficulties nor able to help. In one report of patients claiming to have multiple allergy syndrome or environmental hypersensitivity, patients had consulted an average of six traditional physicians before seeing the clinical ecologist.*

To the patient with chronic, unexplainable, diffuse physical complaints, the clinical ecology approach is appealing, regardless of its scientific uncertainty: The source of the problem is in the external, rather than internal, environment. In his dealings with the medical establishment, which may have been appropriate and medically correct but personally unsatisfying, the person has been looking for symptom resolution but also for explanation: What is the significance of my illness? What does it say about me? Whose fault is it? At some level, the person recognizes that his relationship to his surroundings is not as comfortable as he would like, and rather than accept an internal cause, he adopts a model wherein he can fix the blame on the hostile, toxic environment.

The style of an individual personality also

*Lee RE: Environmental hypersensitivity: Would we really accept the results of sound research? *Can Med Assoc J* 1986;134:1333-1336.

peutic approach. They argue the following:

- There is no scientific evidence that an environmentally induced multiple allergy syndrome exists, with numerous symptoms reflecting an allergic response to environmental substances.
- There is no scientific evidence that immune system damage occurs with low-level exposure to environmental or chemical substances.
- In the absence of documentable causes, multiple allergy syndrome or chemical hypersen-

several patients, which was interpreted as reflecting a history of infections.

The diagnosis of environmental illness was made by the provocation-neutralization technique in 41 of the 50 patients. According to proponents of this technique, symptoms can be provoked by administration of a test dose of an offending allergen sublingually, subcutaneously, or intracutaneously. Following a 10-minute period during which the patient records any symptoms that develop, a lower "neutralizing" dose of the same substance is administered to eliminate the symptoms. Patient reports of symptoms are not typically verified with objective evaluations.

Patient histories in this study fell into three categories. A history of physical disease (such as asthma) that could be exacerbated by environmental factors was found in 11 patients. However, in each of these cases, symptoms were found to be present before the occasion of the alleged environmental exposure. In eight patients, there were no symptoms and no sign of disease; these patients were concerned about the ill effects of possible exposure. In the remaining 31 patients, there was a long history of ailments involving multiple body systems. These patients had been diagnosed as having hypochondriasis, somatization, conversion hysteria, anxiety, depression, and obsessive behavior patterns.

On average, patients had undergone therapy according to clinical ecology methods for 23.9 months, and in only two patients had there been clear improvement. Symptoms had actually worsened during treatment in 22 patients, and in 10 patients new symptoms had appeared. The study concluded that the methods used had not been effective, and that the restrictions in life-style recommended, such as change of job and residence, were extreme and groundless.

Dr. Terr recently published a follow-up retrospective study involving 90 patients who claimed work-related environmental illness. Because of the litigation involved, he had access to complete medical records on all patients, and his findings echoed those in his first report: in most cases, symptoms were present prior to the reported exposure. In addition, 38 of these patients had had psychiatric workup at some point in the past.*

The American College of Physicians has recently published a position paper on clinical ecology in which a challenge is offered to practitioners of this approach.† The position paper recommends that contemporary rigorous scientific methods be applied if clinical ecology is to be accepted as a valid discipline. Control groups and placebos should be used in any study, and statistical analysis should be standard, with randomization and use of confidence intervals. A precise definition of the disorder of environmental illness is needed, and patients should be verified as filling the criteria. Double-blind, placebo-controlled validation is also needed for techniques such as provocation-neutralization testing.

TABLE 2
Substances implicated in environmental illness

ACUTE EXPOSURE	
Ammonia	Petrochemicals
Ammonium persulfate	Phenol
Ammonium polysulfide	Smoke odor
Building construction materials	Sulfur dioxide
Formaldehyde	Tampons (Rely brand)
Mixed organic solvents	Thiopental sodium anesthesia
Pesticides	
CHRONIC EXPOSURE	
Airplanes	Hospitals
Ammonia	Hydrocarbons
Beet dust	Jet aircraft
Carbon tetrachloride	Office machinery
Carpeting	Organic solvents
Cosmetics	Paints
Disinfectants	Smoke
Dust	Soap factories
Foods	Unspecified chemicals in home
Formaldehyde	
Gasoline	

Adapted with permission from Terr AI: Environmental illness: A clinical review of 50 cases. *Arch Intern Med* 1986;146:145-149. Copyright 1986, American Medical Association.

*Terr AI: Clinical ecology in the workplace. *J Occup Med* 1989;31:257-261.

†American College of Physicians: Position paper: Clinical ecology. *Ann Intern Med* 1989;111:168-178.

symptoms, particularly in their early stages. Consider the possibility of diabetes mellitus, thyroid dysfunction, multiple sclerosis, malignancy, and rheumatic disorders in particular. The hyperventilation syndrome has also been found. A clue to the psychological nature of the symptoms is that they tend to be associated with higher cortical function; that is, the patient typically reports fatigue, lack of interest, or inability to cope, rather than strictly midbrain-controlled biological dysfunction such as fever.

It is imperative that you obtain the patient's previous medical records to establish the pattern and duration of symptoms. Instruct the patient to write out his symptom history and previous medical consultations, since he may have access to diaries, calendars, and prescription records. Although experts agree on the importance of reviewing the patient's records for previous test results, they do not agree on the relevance of cost containment considerations in the evaluation of this type of patient. Some have found that their patients are not overly concerned with expense—they want an answer. Other authorities hold the view that cost containment is an important strategy in convincing the patient that you, not the clinical ecologist, have his best interests at heart. Clinical ecology treatments can be very expensive.

In any case, base your diagnostic decisions on clinical suspicion and be prudent with your choice of tests. For example, skin testing can be useful, but results are not proof of allergy and must correlate with clinical findings. Radioallergosorbent testing (RAST) is less likely to provide specific information about potential allergies. If symptoms are primarily respiratory, sinus and chest X-ray studies and a nasal smear for eosinophils and bacteria may be helpful. If you suspect immune dysfunction from any cause, thorough immunologic evaluation is warranted. It is also advisable to look into the reliability of the laboratories where any previous testing was performed. Laboratories that do immunological testing may be particularly variable.

If the patient believes that his symptoms originated in the workplace, question him carefully about the circumstances of the alleged exposure. Compare your findings with the patient's previous medical records as specifically as possible. In a surprising number of instances, symptoms do not correlate with the history and may even predate the supposed exposure. However, keep in mind that many chemicals have neurotoxic effects that could appear to be psychological in origin, and exposure can be insidious, not necessarily occurring in common ways or at expected locations (see Table 3).

High-dose or chronic exposure to certain chemicals, particularly volatile organic solvents, are known to result in a variety of neurotoxic symptoms, including delirium, malaise, stupor, CNS depression, and disori-

TABLE 3
Some neurotoxic effects of chemicals

Anorexia	Insomnia
Anxiety	Irritability
Asthenia/neurasthenia	Lassitude
Behavioral changes	Laughter, unaccountable
Belligerence	
CNS depression	Lethargy
CNS stimulation	Malaise
Delirium	Narcosis
Delusions	Nervousness
Depression	Neuropathy/neuritis
Disorientation	Psychosis
Excitability	Restlessness
Exhilaration	Sleepiness
Fatigue	Stupor
Giddiness	Substance abuse
Hallucinations	Viciousness
Inebriation	

Adapted with permission from O'Donoghue JL (ed): *Neurotoxicity of Industrial and Commercial Chemicals*. Boca Raton, Fla. CRC Press, 1985. Copyright CRC Press, Inc.

do something—and it is entirely possible that the treatment he finds will be exploitive. Remember that as far as the patient is concerned, something is indeed wrong, and the symptoms are entirely legitimate. To the patient, your inability to verify the symptoms or determine their source is your shortcoming, not his.

A major aspect of your task is to help the patient adjust to what he is perceiving. Remind the patient that not every disease can be cured; some we just live with. Helping the patient in such circumstances involves minimizing the effect of the problem on the patient's life. This is the opposite of the clinical ecology approach, which maximizes the effect by centering the person's life on the illness.

Many of these patients resist psychiatric referral, because they sincerely believe that their symptoms are physical. However, if the patient avows even minimal acceptance of a possible psychological cause, referral to a psychiatrist with experience in dealing with psychosomatic disease may be useful (but keep in close contact with both patient

Stress and the manipulative self

Multiple allergy syndrome has been reported in various different patient groups, even entire families, but most commonly the patient is a woman between 30 and 50 who is intelligent and educated. Typically, she is married, has children, and worked prior to becoming "disabled." Some patients have had jobs related to medicine and have acquired some fairly specialized knowledge. It is likely that the medical history is lengthy and includes psychiatric treatment.

Eugene S. Ogrod II, MD, JD, one of the consultants for this article, observes that the restructuring of women's roles during recent years has increased their tendency to stress- and fatigue-related disorders. He describes multiple allergy syndrome in women as a decompensative psychological illness that results in a change in intrafamily dynamics: She is relieved of overwhelming demands from home, family, and job, and others must now take care of her. Her burdens are relieved and she herself becomes the burden. The syndrome becomes the center of the family's existence. He cautions that this is not just a "female disease," however: It is a style of maladaptiveness that may be more commonly adopted by women, possibly because of unreasonable societal role expectations.

Once this model for dealing with difficulties is in place, the patient may be most unwilling to let go of it. Secondary gain is a powerful force. Overcoming resistance in an intelligent, manipulative patient may require creativity on your part. Dr. Ogrod describes one way of confronting an uncooperative patient:

"I said to the patient, 'What do you think it will take for me to provide you with reassurance? You are convinced that you know what is wrong. That puts me in a position of having to argue with you, and that isn't my job. I want to advise you and help you cope, but you must help me understand what I can do to ease your anxieties.' This forced the patient to consider her preconceptions, and to look at what was happening between her and me. She was then able to look more clearly at her relationship with others and with her larger environment."

Such an approach obviously is not appropriate for every patient, but it does highlight an essential aspect of dealing with the patient: You need to look closely at the patient's individual problems, stresses, and personality to determine the best way of helping. Together with the patient, consider these questions:

- What are the stresses in the patient's life?
- What is the patient responding to by somatization?
- What can be done about the stressors?
- What can be done to make the patient more comfortable about the self and the environment?

Dr. Ogrod also warns that you may find yourself on a guilt trip when dealing with this type of patient. Remember that you cannot take on all the burdens for the patient's difficulties yourself. You may end up intervening when you should not, to avoid either anger at the patient or your own guilt and frustration. Keep your expectations for yourself realistic and be careful to protect your own psychological health as a physician.

contributes; this type of thinking is more likely in a rigidly structured personality that needs the security of objective explanations. The common label "20th-century disease" reflects the contemporary popularity of environmental awareness—in the past, the diagnosis might have been neurasthenia or hysteria.

Although patients who believe they have no other choices may find the premises of clinical ecology comforting and useful, orthodox allergists and psychiatrists do not consider clinical ecology an appropriate thera-

An overview of clinical ecology

Each issue of the journal *Clinical Ecology* carries this definition of environmentally induced illness: "Ecologic illness is a polysymptomatic, multisystem chronic disorder manifested by adverse reactions to environmental excitants, as they are modified by individual susceptibility in terms of specific adaptations. The excitants are present in air, water, drugs, and our habitats." The premises of clinical ecology or environmental medicine are based on acceptance of the following concepts:

- Many substances in the environment are capable of causing symptoms in susceptible individuals at levels that are generally considered less than toxic. Environmental illness is a modern phenomenon, caused by pollution and modern technology.
- Suppression of the immune system can occur with exposure to environmental toxins, leaving a person sensitized to any number of other substances.
- The sensitized person has a threshold level of how much environmental toxin can be tolerated, which is his or her total load capacity.
- The concept of total load capacity for environmental stressors determines treatment. It can include avoidance of potentially sensitizing substances; dietary manipulation to limit consumption of symptom-producing foods to tolerable limits; and administration of neutralizing doses of the sensitizing agents themselves.
- Symptoms can affect any body system, and commonly exist as nervous system or behavioral manifestations. Symptoms are assumed to be valid even in the absence of objective physical or laboratory findings.

Abba Terr, MD, of Stanford University Medical Center, reviewed 50 cases of environmentally induced illness, seeking to determine if environmental hypersensitivity indeed is a clinical syndrome with identifiable features, if the patients actually have immunologic abnormalities, and if treatment according to the methods of clinical ecology results in clinical improvement.* Of the patients involved in the study, 40 were seeking worker's compensation for industrial exposure, and three others were involved in civil litigation.

Implicated substances and reported symptoms were too wide-ranging to be clearly diagnostic of a single syndrome (see Tables 1 and 2). Evaluation of the patients' immunologic status included measurement of lymphocytes, T-helper/T-suppressor cell ratios, serum IgA, IgG, IgM, and IgE, and serum complement C3 and C4 levels. The only consistent abnormality found was an elevation in IgA and lymphocyte levels in

*Terr AI: Environmental illness: A clinical review of 50 cases. *Arch Intern Med* 1986;146:145-149.

TABLE 1

Signs and symptoms of environmental illness

ACUTE EXPOSURE		CHRONIC EXPOSURE	
Abdominal pain	Headache	Abdominal pain	Fuzzy thinking
Anxiety	Hyperventilation	Aching	Headache
Chest pain	Hypotension	Anger	Hyperventilation
Constipation	Itching	Anxiety	Insomnia
Cough	Menstrual irregularity	Arthralgias	Nasal irritation
Crossed eyes	Musculoskeletal pain	Chills	Nausea
Diarrhea	Nasal irritation	Constipation	Numbness
Disorientation	Nausea	Crying	Pain
Dizziness	Rash	Diarrhea	Poor memory
Dyspnea	Swelling	Dizziness	Swelling
Eye irritation	Vaginal burning	Dyspnea	"Spaciness"
Fatigue or malaise		Faintness	Throat irritation
		Fatigue	Vomiting

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sitivity should be considered a somatoform disorder or other psychiatric disorder, with the symptoms originating in the person's belief that he is overly prone to illness or has been injured by environmental substances.

- Costly measures recommended by the practitioners of clinical ecology, including extreme environmental control, relocation, and unconventional medical treatments such as vitamin therapy, neutralizing drops, and dietary manipulation, are unwarranted and unnecessarily disrupt the patient's social functioning.
- Clinical ecology treatment may reinforce the person's perception that he is ill and that the environment is responsible.

Fitness STOP

The evaluation: In some instances, patients who believe they have multiple allergy syndrome are seeking validation for insurance compensation. Careful evaluation to rule out systemic disease is necessary. Previous medical records can be the most helpful element for establishing symptom patterns. Assess the degree of correlation between exposure as described by the patient and the onset and nature of the symptoms. Your choice of tests depends on the history and clinical findings.

Your evaluation of the patient claiming multiple allergies or chemical hypersensitivity should balance concern for the person's well-being and desire to improve his or her health against an awareness that you may be in a defensive position. It is possible that a lawyer will be involved at some point if worker's compensation or insurance claims are at stake (see "Advice on the legal pitfalls").

Keep in mind that the patient has probably been through numerous evaluations, and has finally found sympathy and a congenial attitude in clinical ecology. He has been told what he wants to hear, and if you disagree, you are trying to deny him an explanation that he finds comfortable. He may prefer to believe he is allergic to *Candida* or needs large doses of vitamins rather than face psychological shortcomings. He may also see you as standing in the way of his financial gain.

A complete physical examination is absolutely essential in every patient, to rule out any possible physical explanation. Many diseases are associated with vague, nonspecific

Advice on the legal pitfalls

Of course, not every patient who claims to have environmental illness is seeking insurance payment or worker's compensation. Eugene S. Ogrod II, MD, JD, offers the following advice if you are asked to provide a second opinion or deposition.

Stick to your science. Make sure anything you say is well-documented in the mainstream current literature and is acceptable according to current scientific method and opinion. You are always in a defensible legal position if you answer a challenge by saying, "I cannot prove scientifically that that particular theory or approach is correct." You do not have to indicate whether or not you believe something—just what can be proven. Whenever I am asked if I believe something in a legal situation, I reply, "Medicine is a science, not a religion. The issue of my beliefs is not relevant." You are safest if you discuss only what you can prove.

Keep an open mind in all your dealings with the patient. Try to avoid letting the patient channel your discussions into his or her own biased way of thinking. This is particularly important when you are looking for underlying physical illness. The patient may be so convinced that his interpretation is correct that he will not give you all the objectively pertinent information unless you ask for it specifically. Solid interview technique is essential.

Another trap to avoid is allowing your emotions to be manipulated by the patient, the lawyers, or the circumstances. If you give in to the patient and let him have a week off work, for example, and are later challenged on this, you will have no way of defending yourself. Your decision can be considered faulty, and you may end up having your ego and reputation dismantled by an attorney in court.

entation. However, there is no evidence that vague, nonspecific behavioral or psychological symptoms are caused by environmental hypersensitivity in the absence of exposure to known toxins. When dealing with possible chemical exposure, be sure to obtain firm documentation about the substances involved and the duration and circumstances of exposure before drawing any conclusion.

The lack of correlation between symptoms and history is an important indication that the chemical hypersensitivity or allergic condition is spurious. Look for a correlation—or lack of correlation—between type of symptoms with type of substance as well. For example, formaldehyde is more likely to be associated with cutaneous and mucous membrane symptoms rather than respiratory symptoms. However, do not assume that the patient is deliberately falsifying the history or malingering. In all likelihood, he holds an entirely honest belief in his interpretation of his condition.

If it seems likely from the history that there is an actual chemical exposure involved, a comprehensive evaluation would involve pulmonary function testing, provocation testing, and double-blind challenge. Some clinicians also recommend bronchoscopy or endoscopy, as well as histamine or methacholine challenge testing. A thorough evaluation of the workplace or site of exposure is also needed. Information on evaluation for possible occupational exposure is available from the National Institute for Occupational Safety and Health.*

*Copies of current NIOSH Recommendations for Occupational Safety and Health Standards are available from the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402.

EXPRESS STOP

Ongoing care: If the patient comes to you for care, your goal is not to cure. Rather, it should be to help the person understand his maladaptiveness and lessen the discomfort. Extreme measures such as relocation or job change are inappropriate unless documented exposure has taken place. Your long-term commitment to the patient requires appropriate investigation of new complaints and the continuing reassurance of your concern.

When a person adopts the unsubstantiated notion that he or she is allergic or hypersensitive to the environment, the unwarranted disruption to the entire family can be enormous. The person may demand a restructuring of the environment to remove the potential hazards. The degree of avoidance can be extreme, extending to complete withdrawal from previous occupation, household duties, and family role.

Such life-style alteration brings in the issue of secondary gain, which need not necessarily be economic. For example, the patient receives much attention by requiring that his special needs be given central consideration. The avoidance strategies in themselves create a secondary disability: The person is unable to go to work because it will make him sick, and he must not interact normally with family members unless they cooperate with his restrictions. Moreover, in a convoluted intrafamily dynamic, the concept of tertiary gain—financial or emotional benefit to a parent, child, or spouse accruing directly from the patient's illness or incapacity—also may come into play. Family members may have also developed adaptations for dealing with the patient that center on the illness, and may be unwilling to alter this because they find it easier to deal with the patient in terms of the disorder than in any other way.

Dealing with such a patient is difficult, and requires tolerance, commitment, and creativity (see "Stress and the manipulative self," page 54). Do not simply dismiss the patient. If you tell him that nothing is wrong and there is nothing you can do, the patient is going to keep looking for someone who will

and psychiatrist). Psychiatric treatment, including medication and psychotherapy as appropriate, is most likely to be helpful for patients with depression, anxiety disorder, or psychosis.

Be careful when you consider referring the patient for further medical evaluation, and keep in mind that the more you refer such a patient without a specific reason the more you may actually increase the patient's anxiety. You also tend to reinforce symptom reporting, so the patient may further magnify the illness in his own mind, and may only become further disappointed and more frustrated. If you believe the patient would benefit from psychiatric evaluation and treatment, try to present the suggestion in a way that he finds acceptable, emphasizing that it may be a constructive way to help him cope with his problems.

Your long-term commitment to the patient also involves attention to any new symptoms the patient develops. New complaints should be investigated as appropriate; a person with many years of somatic symptoms can develop an autoimmune disease, for example, that may initially resemble a psychological disorder. Regular visits do not mean you are overtreating or taking advantage of the patient. He needs your ongoing attention and support. Make it clear that you are going to help him deal with whatever the stresses are—physical, psychological, or emotional—that may be contributing to his lack of well-being. It is inadvisable, however, to indicate to the patient that you are going to cure him. Psychiatry has not been uniformly successful with somatization disorders. However, patients with total allergy suffer from a variety of psychiatric conditions, not just somatization disorders. Your long-term task is to keep helping the person deal with his body, attitudes, and misperceptions, and to prevent his being exploited. □

PREPARED BY NANCY WALSH

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Assessing Pesticide Impact on Human Health in Nebraska

by Dr. Edward F. Vitzthum, Dr. David L. Olson, and Dr. Roger E. Gold

Health screenings and surveys of a Nebraska Aviation Trades Association (NATA) volunteer cooperator group were conducted as one component of a project aimed at assessing pesticide impact on human health in Nebraska. This comprehensive evaluative study was conducted as part of the National Agricultural Pesticide Impact Assessment Program (NAPIAP), a program of the Extension Service, U.S. Department of Agriculture.

Over a three-year period commencing in February 1983; the study prospectively examined 125 commercial pesticide workers (57 aerial applicators and 68 structural applicators) and 33 controls. The pesticide workers consisted of two groups: aerial applicators whose exposure to pesticides was primarily during summer months, and structural applicators whose exposure was continuous.

Study Profile

The aerial applicators were examined twice a year; the structural applicators were examined once a year. The controls, who were selected from a group of individuals living in the same geographic areas as the aerial applicators but not occupationally exposed to pesticides, were thoroughly examined once a year. A total of 407 examinations were performed. All participants were male, the average age of the pesticide workers was 38 (40 for the aerial applicators and 36 for the structural applicators), the average age of the controls was 39. The aerial applicators tended to have higher body weight, alcohol intake and SGOT levels at the winter (unexposed) exam, but the SGOT values were within the normal range and none of the differences were statistically significant.

The aerial applicators tended to have a more frequent history of accidents or injury, more ENT complaints, and worse hearing; however, they had fewer cardiac and pulmonary complaints and less reported illness when compared with the control group. None of these findings were statistically significant. No differences were seen in the blood chemistry values, complete blood counts, or cholinesterase levels between any of the groups.

Study Results

Both the initial physical examinations and survey of the NATA volunteers were conducted during the association's annual state convention. Among the 57 volunteer participants were five non-Nebraskans. The median age group was 30-39 years; more than half of the group had 11 or more years in agricultural aviation and one in five had more than 20 years in the business. All were certified pesticide applicators and nearly two-thirds of the group said 50 percent or more of the pesticides they applied were restricted use products. Fifteen members of the group (26 percent) said they had been made ill at some time from working with pesticides and well over half reported that they knew someone else who had been made ill from working with pesticides. Only eight persons (14 percent) said they always used label-specified safety clothing and equipment when handling pesticides; however, 25 (44 percent) said they did so "frequently."

The second health screening and survey was conducted midway through the 1983 application season and, the third was during the February 1984 association convention.

Of the 47 participants in the second screening/survey, three persons said they had been ill at some time since the first screening. One of the three said the illness was definitely pesticide-related and a second said his was "possibly" attributable to pesticides; the third was not pesticide-related. Nine persons (19 percent) reported they "always" used label-specified safety equipment, while 11 (23 percent) said they used it "frequently."

A total of 50 responses were tabulated after the third (February 1984) screening/survey. Two persons reported having been ill since the preceding screening/survey and only one said the illness was "possibly" attributable to pesticide exposure. There was no significant difference in the numbers and percentages of persons who said they followed product label directions for the use of safety equipment; nine (18 percent) "always" used it; 19 (38 percent) used it "frequently."

Four of the 41 participants who returned completed surveys after the fourth screening/survey (August 1984) said they had been ill at some time during the preceding six months. None of the illnesses were reported to be pesticide related. Again, the numbers and percentages of persons using label-specified safety equipment were not significantly different from the preceding survey; seven (17 percent) said they "always"

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used it, and 10 (24 percent) said they "frequently" used it.

The fourth survey also included items on changes in attitudes concerning pesticide usage and practices related to handling and application. Respondents were asked to characterize their present level of concern for 1) their own health, 2) persons residing in the vicinity of application sites, and 3) the environment in general. The majority in each case said there was "no change."

Participants also were asked to compare present practices with those used prior to the start of the project with respect to:

- reading pesticide product label before use,
- using label-specified protective clothing/equipment,
- calibrating the application system of the aircraft,
- wearing hearing protection, and
- considering meteorological conditions before applying pesticides.

The overwhelming majority in each case said there was no change; the balance said they employed the practice "more frequently." Four persons reported they were exercising more care in securing stored pesticides and two said they were using more precautions in empty container disposal. Changes in health-related practices included dieting (3), quitting or trying to quit smoking (11), and starting to wear hearing protection while flying (7).

Conclusions

The number of participants in this study is an obvious limitation. However, we can conclude that aerial pesticide applicators are occupationally exposed to pesticides with potentially serious negative consequences. Extreme caution is warranted when using highly toxic products. In addition, despite the fact that many operators use "closed" systems to load their aircraft, label-specified protective clothing/equipment should be worn to reduce the potential for exposure to pesticides.

Finally, the study concluded that, in the study groups, the incidence of health problems of pesticide workers is the same as controls. In workers with periodic exposure to pesticides, no differences could be documented in their general health between exposed and unexposed periods. When health problems were identified, they were overwhelmingly due to the same problems which adversely affect the health of the general population; i.e.: minor musculoskeletal and upper respiratory problems, accidents or tobacco and alcohol related diseases.

Reproduction Not Affected by Pesticide Exposure NAWG Study Shows

by Margie Williams

Wheat growers who routinely use pesticides on their farms have not suffered higher rates of miscarriages, stillbirths, or birth defects than non-exposed siblings. That is the preliminary result of a study sponsored by the National Association of Wheat Growers. The study was undertaken to shed more light on possible adverse health effects of pesticide use.

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While realizing that it is impossible to establish the complete absence of adverse health effects of pesticide use, the NAWG, after seeking the professional advice of Hopes Consulting, Inc., decided that it would at least be possible to analyze the health histories of a cross sampling of wheat growers for indications of negative trends related to reproduction. The study is focused on reproductive complications, since public concerns related to pesticide use often center around this issue. Hopes Consulting was selected to conduct the research.

Detailed statistical analysis of data collected by Hopes, which will fully interpret any differences among the population groups under study, is yet to be completed. Comparative trends among the groups are evident from the initial data review, however.

Data Collection

Clifford Roan, NAWG's project director and leader of a team of epidemiologists, entomologists, chemists, physicians, computer specialists, and records management experts who participated in the project, is a seasoned professional in population studies. Roan, president of Hopes Consulting, completed a study in 1981 of agricultural aviators and their siblings for the National Agricultural Aviation Association.

The pilots' study was very similar to the NAWG project, and produced many similar results. The NAWG study, in fact, was intentionally designed to complement the agricultural aviation study to strengthen the findings of both by widening the population under evaluation.

The NAWG study is based on information collected voluntarily from randomly selected wheat grower families in NAWG's 16 member states. Approximately 10 percent of the 1,500 families who received health surveys responded. The response rate for siblings of the wheat grower families was 3.8 percent.

The sibling families had no pesticide related occupations, and were therefore considered the "control" group for purposes of comparing health histories. By

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How do you perceive your business potential for 1984?
I don't have the slightest idea. Every year is different. If the price of farm products goes up, it could be a good year.
Max Gibson
Western Aviation
Blackfoot, Idaho

Table I
Miscarriages, abortions and stillbirths in the families of WHEAT GROWERS and their SIBLINGS.

Group	Miscarriages Abortions and Stillbirths	Prematures	Full Term Pregnancies	Average # of Pregnancies
Wheat Growers ..	42	6	362	2.77
Control Males....	22	4	104	2.45
Wheat Grower's Spouses.....	43	6	316	3.02
Control Females .	23	4	112	2.28

Table II
The number of individuals reporting birth defects and early childhood diseases in the four study groups.

Group	Number in Group	Number of Individuals Reporting Defects	Percent Reporting Defects
Wheat Growers	145	25	17.24
Control Males.....	51	11	21.57
Wheat Grower's Spouses ..	121	20	16.53
Control Females	58	11	18.95

Table III
The number of birth defects reported by the study groups in relation to the number of live births.

Group	Total live births	Total birth defects	Percent defects
Wheat Growers.....	368	43	11.68
Control Males	108	19	17.59
Wheat Grower's Spouses	322	32	9.94
Control Females.....	116	21	18.10

o note, however, that a similar rend indicating a higher sibling ncidence of interrupted pregnancies and stillbirths was discovered in the ag pilots' study.

The fact that wheat grower amilies *do not* exhibit a trend oward greater reproductive morality than their siblings' families is the important finding of this study.

Birth Defects and Early Childhood Diseases

The occurrence of birth defects in both populations under study was so low that evaluation of

these data was difficult. However, it can be stated that the percent of individuals reporting one or more birth defects in their children appears lower in the wheat grower respondents and their spouses than in the control males and females. These data appear in Table II.

The number of live births resulting in a reported birth defect is another measure of reproductive morbidity. The data in Table III do not suggest that the occupation of wheat production is responsible for any increase in the numbers of birth defects reported by the study group. The same general conclusion was drawn in the comparative study of agricultural aviator families and their siblings' families.

Conclusions

Complete statistical evaluation of the pesticide exposure data collected by Hopes Consulting has neither been finalized nor reviewed by the entire project group. But preliminary analysis points to the tentative conclusion that wheat farmers in the study group do not suffer from any increases in miscarriages or birth defects in comparison with their siblings.

Obviously, it is not possible to characterize the entire population of wheat farmers from this data, since the population sample is comprised of only 148 wheat growers, 121 wheat grower spouses, 53 control males, and 61 control females. But, in spite of these limitations, the fact that prolonged pesticide exposure does not appear to cause abnormal reproductive performance in wheat growers is clearly revealed in the study.

This finding is a challenge to those who would obstruct necessary use of pesticides on cropland.

Editor's Note: This recently-completed National Association of Wheat Growers health survey of routine agricultural chemical users confirms previous NAAA findings.

comparing sibling families, any inherited predispositions toward a particular health problem would be approximately the same.

Farmers participating in the study indicated that they had applied pesticides themselves in their farming operations, and that they also hired professionals.

The data collected by Roan and his colleagues, Kenneth Olds, Helen Seufert, and others, were used to compare demographic statistics of wheat producers, including age, weight, education, and height, with their brothers and sisters and the spouses of their brothers and sisters. Comparisons between these groups were also extended to general health status — the number of children born to the couples, and number of boys versus the number of girls, the number of miscarriages and stillbirths, and the numbers and kinds of birth defects.

The data in Table 1 summarize reproductive information available on wheat growers and their wives, and the "control males." who are siblings of wheat growers or husbands of siblings, and "control females," who are siblings of wheat growers, or wives of siblings. The table indicates a higher average number of births in wheat grower families, compared to their siblings, but much lower occurrences of miscarriages, abortions, and stillbirths. The average rate of these occurrences among wheat growers was 114.1 per 1,000 and 133.5 per 1,000 among wheat growers' spouses. The rate for "control males" measured 203.7 per 1,000, and, for "control females" 198.3 per 1,000.

It has not yet been possible, based on health history data collected from the two populations, life style habits, and other factors, to account for the trend toward the higher sibling incidence of interrupted pregnancies and stillbirths. A more extensive population comparison would need to be undertaken in order to investigate this trend further. It is interesting

An Investigation of the Possible Effects of PESTICIDE EXPOSURES on Reproductive Mortality and Morbidity

Part I

Preliminary Report Comparisons Between Populations of Agricultural Pilots and Their Siblings Who Are Not Occupationally Exposed To Pesticides

Editor's Note

The results of the NAAA Health Survey were unveiled this month at the NAAA's Las Vegas Convention. This month WAA is publishing the first analysis of that data. Future issues of the magazine will contain further analyses.

Space limitations preclude publishing all the appendixes in WAA. Upon its completion, interested parties will be able to purchase the complete report from the NAAA. An announcement of the report's availability will appear in WAA.

This study was done by Hopes Consulting Inc.

Background

The concept for these investigations is a logical extension of the former Arizona Community Studies Project. While diligently attempting to collect medical and pesticide exposure data from a variety of populations in Arizona, it became rather obvious that the objectives of these studies could not be accomplished in view of the state of biochemical and pesticidal chemical arts. Furthermore, public concerns, then and now, were with cancer, birth defects, and mutations.

At the suggestions of Donald P. Morgan, M.D., Ph.D.[1], at that time the project physician and epidemiologist, a preliminary project was designed and initiated to investigate reproductive mortality and morbidity data from populations occupationally exposed to pesticides. This preliminary study, with partial sponsorship from the National Agricultural Aviation Association, was started in 1971 with the cooperation of local pest control operators and agricultural pilots.

Limited data were collected and evaluated from a population of 143 individual respondents. The size of the sample was inadequate and comparable data from the general population were unavailable in a form that would permit adequate statistical comparisons. To overcome these difficulties, the concept of collecting data from siblings of the basic study population was considered. Funding for an investigation of adequate size was unavailable. The records from these preliminary investigations were retained by the former project director, Clifford C. Roan, Ph.D.[2]

Continuing public and regulatory concern with the possible effects of pesticides on human health resulted in the National Agricultural Aviation Association approaching three federal agencies for their cooperation in further investigations of this general nature.

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[2]Senior Consultant, Hopes Consulting, Inc., Aberdeen, Maryland 21001

Negative responses from the Environmental Protection Agency, the Federal Aviation Administration, and the U.S. Department of Agriculture resulted in the National Agricultural Aviation Association's contact with Hopes Consulting, Inc. for assistance in expanded investigations along the lines of the earlier preliminary studies.

Introduction

Pesticides are chemicals designed to have an adverse effect on some biological component of the environment that is regarded as generally or specifically undesirable at a particular place or time. Pesticides are classed, properly, as toxic chemicals.

In many cases, based on laboratory tests with experimental animals and a series of in vitro tests on other biological systems, some pesticides have been found to be carcinogenic, teratogenic, and mutagenic. These same effects have been found associated with many other synthetic and naturally occuring chemicals routinely found in, or deliberately introduced into, the environment or even directly into human bodies.

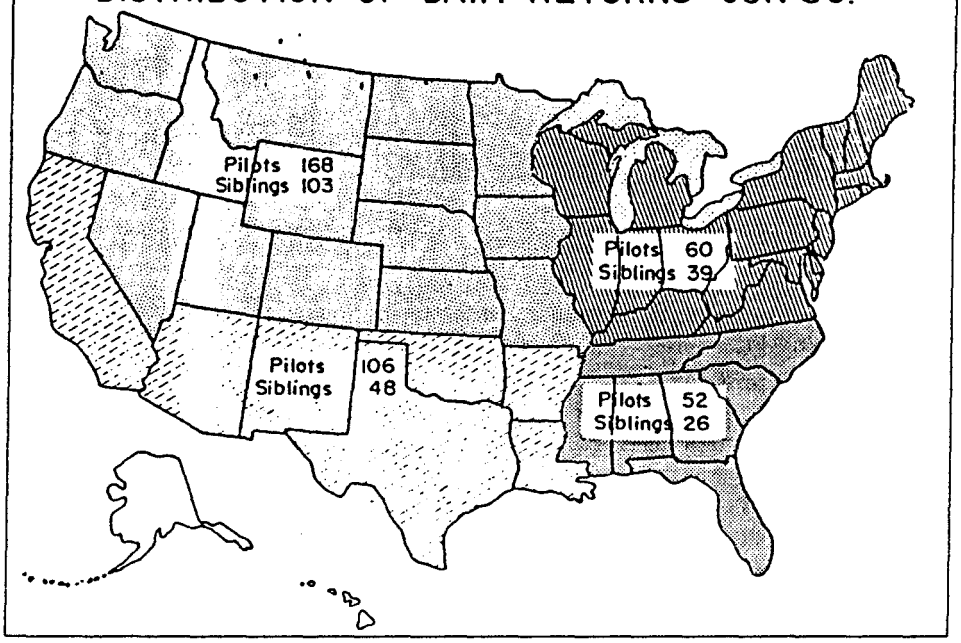
Although pesticides were designed and are used to confer some general or specific benefit, the exercise known as the risk/benefit analysis is exceedingly complex. The possible interactions of pesticides with a great variety of other commonly used chemicals such as alcohol, nicotine, caffeine, low molecular weight halogenated hydrocarbons in drinking water, etc. do complicate the issues. The failure of regulatory agencies to look first to the possible interactions and background exposures results in costly actions that do not provide for feedback of information in a timely manner.

The investigations are based on simple assumptions that permit progression to more explicit detail if the general findings warrant such approaches:

1. Absolute safety, i.e., the lack of hazard cannot be determined with regard to any chemical in its interactions with *Homo sapiens* or any higher or lower species.

FIGURE 1

DISTRIBUTION OF DATA RETURNS JUN 80.



2. There is a dose/response relationship with regard to any chemical and its adverse or beneficial effects. Individuals or populations with higher doses (exposures) will show more effect than comparable individuals or populations with lower doses or exposures.

3. Individuals or populations who apply pesticides, in addition to sharing the background exposures of the general population, are more highly exposed as a result of occupation than the general population.

Study Population and Data Acquisition

Two basic populations are used in the studies reported here. The first is comprised of families of members of the National Agricultural Aviation Association with a like population of their siblings, who are not occupationally exposed to pesticides.

Survey packets were made available through state associations affiliated with NAAA in a quantity adequate for 75 percent of the membership listed in the 1979 NAAA Membership Directory. Additional packets were made available on request to individuals or state associations. The completion and return of the questionnaires and the solicitation, by the participating pilot, of a cooperating sibling was on a voluntary basis. The geographical distribution of completed questionnaires appears in Figure (1).

As the questionnaires were received, the serial number was completed indicating state, commodity code, study number, and participant identifier. The cover sheet containing the name and address was removed to a secure file and the balance of the questionnaire coded. No evaluation of the completeness of the data was done at this time. Records were maintained to determine the receipt of a matching sibling questionnaire. Sibling questionnaires were coded to indicate the state of residence at the time of completion of the form. For data analysis purposes, the sibling was considered with the state from which the pilot return was received. Subsequent evaluations to study geographical effects can utilize specific locations.

Since evaluation of the returns was not done initially, the number of "matched sets" reported refers to the entry of the serial number into our records. In assembling "matched sets" for evaluation of reproductive data, it is obvious that only those data con-

TABLE 1 AGE, HEIGHT, WEIGHT AND YEARS OF FORMAL EDUCATION OF THE STUDY POPULATION COMPRISED OF PILOTS, THEIR WIVES AND SIBLINGS AND THEIR SPOUSES

		Agricultural Aviation		Siblings	
		Males N = 196	Females N = 178	Males N = 136	Females N = 143
Age	Min	25	23	22	19
	Mean	42.78	40.60	42.04	40.73
	Max	71	67	76	73
Education	Min	8	10	8	8
	Mean	13.26	13.39	13.62	13.32
	Max	20	20	22	22
Height	Min	56	52	60	52
	Mean	70.50	64.22	70	64.63
	Max	76	72	78	71
Weight	Min	130	95	120	98
	Mean	183.55	133.66	182.55	137.85
	Max	270	215	310	250

taining information from both the pilot and his sibling regarding births, miscarriages, and birth defects is useful. The data on descriptive statistics in Table 1 are based on the overall data without specific matching of reproductive data. The general conclusion from these data are that the two populations are reasonably homogeneous with regard to the characteristics listed.

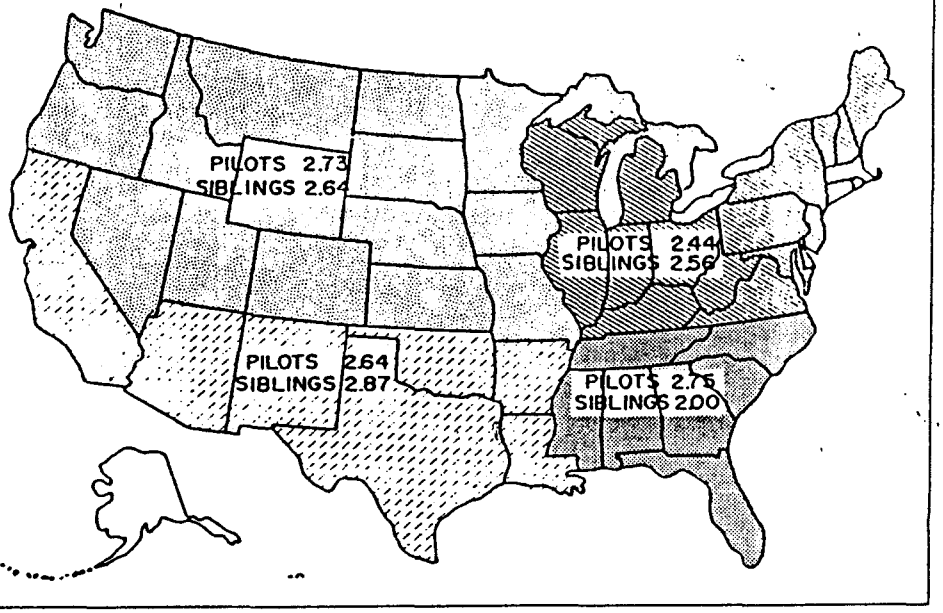
The general reproductive performance of these two populations is indicated on an arbitrary geographical basis in Figure (2). Using a chi square analysis there are no regional or population differences in these data.

Analysis of Data on Live Births

The two basic populations, i.e. agricultural aviation families and agricultural aviation siblings, were further subdivided to detect any specific sex effects. A population of pilots/wives (pilots/wives = agricultural aviation family) was compared with a population comprised of a sister (and spouse) of the pilot. A second subset was comprised of the other possibility, i.e. the pilot's brother and spouse. Using these population subsets, the age groups for the reported pregnancies were compared. These data appear in Table 2. There are no significant differences among these populations with regard to these characteristics based on a chi square analysis. Using a "T" test for matched pairs to evaluate the number of pregnancies reported produced the data in Table 3.

FIGURE 2

DISTRIBUTION OF LIVE BIRTHS PER FAMILY UNIT IN THE FOUR GEOGRAPHICAL REGIONS



Analysis of Miscarriages and Stillbirths

Data on the two basic populations regarding both the number of individuals reporting such events and the number of incidents reported appear in Table 4. Only in the case of the number of incidents reported does there appear to be a significant difference. ($P < .05$)

Comparisons of the ages of the mothers at which these events occurred, Table 5, do not reveal any significant differences in this respect.

Combining these two basic popu-

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TABLE 2 DISTRIBUTION OF PREGNANCIES BY AGE FOR THE TWO SUBSETS OF THE BASIC STUDY POPULATIONS

Age Range	Pilots Wives No.	(%)	Pilots Sisters No.	(%)	Pilots Wives No.	(%)	Pilots Sisters-in-Law No.	(%)
15/20	21	(11.2)	29	(15.4)	24	(13.3)	31	(18.6)
21/25	80	(42.8)	86	(45.7)	79	(43.8)	57	(34.1)
26/30	54	(28.9)	48	(25.5)n.s.	39	(21.7)	53	(31.7)n.s.
31/35	20	(10.7)	19	(10.1)	22	(12.2)	15	(9.0)
36/41	12	(6.4)	6	(3.2)	16	(8.9)	11	(6.6)
Range	20		21		25		27	
Minimum	17		16		16		14	
Maximum	37		40		41		41	

lations there were no significant differences apparent on the basis of geographical distribution as indicated in Figure (3).

A simple binomial evaluation, Table 6, of the subsets, i.e. pilot's wives versus pilot's sisters and pilot's wives versus pilot's sisters-in-law did not reveal any significant differences.

Analysis of Birth Defect Data

Birth defect data were reported only in part one of the questionnaire (pilots, brothers, or brothers-in-law). The data available for this component of the study represents a smaller population than that for the reproductive mortality data.

The data for birth defects appear in Table 7. In view of the lack of a significant difference between the two basic populations, it appeared unlikely that differences would be observed among the subsets matching pilot against brother and pilots against brothers-in-law. In view of the relatively small number of events, the subsets were evaluated using McNemar's binomial distribution Table 8, and as might be expected, no differences were detected at a probability of less than 0.05.

An evaluation of the birth defects incidents versus the age of the mother appears in Table 9. An analysis of variance did not reveal any significant differences with respect to the mother's age in the two populations.

The recorded information on birth defects were further evaluated by grouping the data according to the

TABLE 3 THE RESULTS OF T TEST ANALYSIS (MATCHED PAIRS) OF THE NUMBERS OF PREGNANCIES OCCURRING IN FOUR POPULATIONS

	Pilots Wives	Pilots Sisters	Pilots Wives	Pilots Sisters-in-Law
Mean	2.86301	2.9726	2.8806	2.83582
Standard Deviation	1.4269	1.38458	1.25213	1.74148
Standard Error of Mean	.168161	.163174	.154127	.214361
		n.s.		n.s.

TABLE 4 COMPARISONS AMONG LIVE BIRTHS, MISCARRIAGES AND STILLBIRTHS BETWEEN THE TWO BASIC POPULATIONS

	Agricultural Aviation Families			Agricultural Aviation Siblings	
			Number of Incidents (%)		
Live Births	373	(92)		360	(88) p = < .05
Miscarriages & Stillbirths	29	(8)		47	(12)
			Number of Individuals (%) Reporting		
No Miscarriages or Stillbirths	116	(83)		106	(76)
Miscarriages & Stillbirths	24	(17)		34	(24)

TABLE 5 COMPARISONS OF THE AGE OF THE MOTHER AT WHICH MISCARRIAGES AND STILLBIRTHS OCCURRED IN THE TWO POPULATIONS

Age *Range	Agricultural Aviation Families Number	(%)	Agricultural Aviation Siblings Number	(%)
15/20	1	(4)	8	(17)
21/25	12	(46)	16	(35)n.s.
26/30	6	(23)	7	(15)
31	7	(27)	15	(33)

*Age was not available in all reported cases. These events were excluded from this analysis.

ollowing classifications:

Major Malformations;

Codes 1, 2, 4, 9, 10, 11, 12, 16, 17, 18, 20, 21, 25, 33, and 35.

Musculoskeletal;

Codes 26, 27, 28, 29, and 30.

Other significant defects;

Codes 15, 19, 22, 23, 24, 31, and 32.

Probably not relevant;

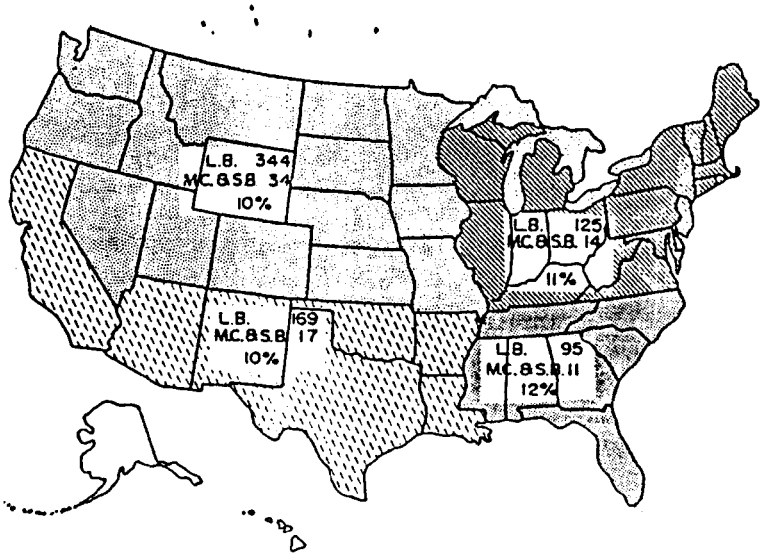
Codes 3, 5, 6, 7, 8, 13, and 14.

The codes referred to here are those listed in question 10, part one, of the questionnaire. Grouping these data in this manner did not result in the detection of significant differences between the two basic populations.

In view of the low frequencies of birth defects in both populations and the lack of statistically significant differences in any of the other tests, there appeared to be no prospect of further information from analyses of geographical distributions, etc.

FIGURE 3

GEOGRAPHICAL DISTRIBUTION OF LIVE BIRTHS, MISCARRIAGES AND STILLBIRTHS IN THE COMBINED POPULATIONS. (NO SIGNIFICANT DIFFERENCES)



Discussion

Published data pertinent to the subject of this study are exceptionally rare. With regard to birth defects the following statement is of value. "Birth defects cause nearly 20 percent of infant mortality in the United States. In the period covered in this report, the incidence of the majority of birth defects neither substantially

decreased or increased. The paucity of increases suggests that few, if any, widespread and powerful new teratogens were introduced."[3]

The limitations of epidemiological studies in the subject of human birth defects is stated well by Nelson et al[4], "The present study does not indicate any overt causal relationship between the 2, 4, 5-T use and facial clefts. It is important to recognize that such an effect, if it were to exist, would not have been detected if the increase in facial clefts were less than twofold."

Studies of the agricultural aviation population and their siblings suffer from these same limitations. It was not possible to account for the trend toward slightly higher incidence in the sibling population. The data concerning the health, life style habits, and other factors reported by the respondents have not been analyzed as yet.

With respect to the data on miscarriages and stillbirths, there are very few published current papers on this subject. The term "miscarriage" is used instead of "spontaneous abortion" since the former is far better

[3]Annual Summary 1979. Reported morbidity and mortality in the United States. U.S. Department of Health and Human Services.

[4]Nelson, C. J., J. F. Holson, H. G. Green, and D. W. Gaylor, 1979. Retrospective study of the relationship between agricultural use of 2, 4, 5-T and cleft palate occurrence in Arkansas. Teratology 19(3):377-383.

TABLE 6 McNEMAR'S BINOMIAL EVALUATION OF MISCARRIAGES AND STILLBIRTHS COMPARING PILOTS WIVES VS PILOTS SISTERS

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		Pilots Wives	
		Yes	No
Pilots Sisters	Yes	2	16
	No	13	40

Z = −0.0560 n.s.

McNEMAR'S BINOMIAL EVALUATION OF MISCARRIAGES AND STILLBIRTHS COMPARING PILOTS WIVES VS PILOTS SISTERS-IN-LAW

		Pilots Wives	
		Yes	No
Pilots Sisters-in-law	Yes	4	12
	No	5	42

Z = 1.8651

TABLE 7 COMPARISONS OF BIRTH DEFECTS DATA REPORTED BY THE BASIC STUDY POPULATIONS[1]

	Number of Families Reporting		
	No Incidents	One or More	Number of Incidents
Agricultural Aviation Families	94	21	23
		n.s.	n.s.
Agricultural Aviation Siblings	98	17	19

[1]Since birth defects data is recorded only on Part I, the matched population available for this analysis is smaller than the miscarriage and stillbirth data.

TABLE 8 McNEMAR'S BINOMIAL EVALUATION OF INDIVIDUALS REPORTING BIRTH DEFECTS

		All Pilots	
		Yes	No
Brothers and Brothers-in-Law	Yes	2	17
	No	19	77

Z = −0.334
No Significant Difference

Environmental Illness

A Controlled Study of 26 Subjects With '20th Century Disease'

Donald W. Black, MD; Ann Rathe, BA; Rise B. Goldstein, MSW, MPH

Environmental illness is a polysymptomatic disorder believed by "clinical ecologists" to result from immune dysregulation brought on by common foods and chemicals. We systematically evaluated 26 subjects who had been assigned a diagnosis of environmental illness. The subjects indicated a strong interest in their diagnosis, were generally satisfied with their clinical ecologist, and were dissatisfied with traditional medical approaches. Subjects reported varying treatments, including dietary restrictions, avoidance of offending agents, and physical treatments. Using the Diagnostic Interview Schedule, we found that 15 (65%) of 23 subjects met criteria for a current or past mood, anxiety, or somatoform disorder compared with 10 (20%) of 40 age- and sex-matched community controls. We conclude that patients receiving this diagnosis may have one or more commonly recognized psychiatric disorders that could explain some or all of their symptoms.

(*JAMA*. 1990;264:3166-3170)

ENVIRONMENTAL illness (EI) has attracted attention in the news media and the scientific community, among insurance carriers, and among physicians (*US News and World Report*. February 20, 1989:77).[1-4] A subculture has developed around this concept that is led by but not limited to practitioners who call themselves clinical ecologists. These nontraditional practitioners claim to have special expertise in diagnosing and treating EI and its manifestations.[5-11] A network of clinical ecologists exists in the United States, Canada, and Great Britain. They have their own professional organizations and journals and special hospitals and clinics.

Patients with this condition are said to have an environmentally induced illness or chemical hypersensitivity disease, but other synonyms have been used as well, depending on the form of illness the patient is believed to suffer from (candidiasis, immune dysregulation syndrome, cerebral allergy, etc). The concept underlying EI is that common foods and chemicals create dysregulation of the immune system, which leads to the development of physical and mental disorders.[5-11] Although there is no unanimously accepted definition for this polysymptomatic disorder, it is usually diagnosed on the basis of reports of food intolerance, exposure to environmental agents (eg, chemicals, hormones, *Candida albicans*), the subsequent development of physical or psychiatric signs or symptoms in response to levels of these agents that are tolerated by most people, and improvement associated with avoidance of suspected agents. The results of provocation testing, elimination diets, or oral food challenges are also believed to assist in diagnosis. In addition to avoidance of offending substances, special diets and symptom neutralization are common treatments.[12]

The medical community has been largely skeptical of EI and has produced position papers critical of clinical ecology and various testing procedures.[13-14] There are currently neither acceptable case definitions nor established methods to verify the existence of EI. In fact, the plethora of symptoms attributed to the disorder, the lack of reproducible laboratory abnormalities in persons with a diagnosis of EI, the use of unorthodox methods for its diagnosis, and the use of unproven treatments have all worked to undermine its credibility.[15-17]

Five case series[14,15,17-19] that have been presented in the literature are relevant to EI. The authors almost uniformly observe that many symptoms of EI overlap with recognizable psychiatric syndromes, which, if diagnosed, offer a more parsimonious explanation for the symptoms. In fact, our own interest in EI developed after screening a 35-year-old woman for a treatment study of obsessive-compulsive disorder. She reported that her physician told her she had systemic candidiasis, a form of EI that had resulted in her obsessions and compulsions. She was instructed to buy a popular book about the subject,[7] and multivitamins, oral nystatin, an antioxidant agent, evening primrose oil, and yogurt douches were prescribed. Although she initially felt better on this treatment regimen, after 6 months her symptoms had not improved. She became dissatisfied and stopped seeing the physician.

This patient's experiences led us to review the literature[11] and to develop a project to explore the associations between EI and psychiatric disorder. We sought to improve on the methods used in the five case series noted above by providing a standardized psychiatric assessment using instruments of established reliability, by obtaining an age- and sex-matched control group from the community, and by obtaining a less biased sample. In the published case series, subjects were recruited from clinic or hospital populations or were referred for compensation examinations. These samples may be biased toward including more individuals with physical and psychiatric disorders than would be found in subjects recruited in other settings. This bias could explain the high rates of mental disorder found in the samples.

SUBJECTS AND METHODS

Cases

Twenty-six subjects who had received a diagnosis of EI from a clinical ecologist were recruited between June and September, 1988. We used a variety of methods to recruit subjects, including soliciting EI support groups for volunteers, soliciting cases seen in the psychiatric and occupational medicine clinics at the University of Iowa Hospital, Iowa City, and solicitation through both a hospital newsletter and a flyer

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$10 000 or more. Vitamin supplements, neutralising antigens, and special foods and water are also expensive. Hospitalization in "environmental control units" is costly and may not be reimbursed by third-party payers. A move to the mountains, desert, or seashore is not only costly but also separates the patient from his family, friends, and employer. Since these locations have not been demonstrated to be more healthy or free from pollution than other locales, it is difficult to understand the wisdom of such a recommendation.

Finally, if the results of our study and the experience of Brodsky,[17] Stewart and Raskin,[14] Pearson et al,[18] and Terr[20] are any indication, many if not most of these patients have common psychiatric illnesses that are easily diagnosed, including affective disorders, anxiety disorders, and somatoform disorders. The affective and anxiety disorders usually respond well to treatment.[21] The somatoform disorders are more vexing, but supportive interventions are often helpful.[22]

Methodologic Limitations

Several limitations of this study need to be considered. First, the sample was small, and our subjects may not have been representative of patients with EI as a whole. Many subjects were recruited through a support group. Belonging to such a group and volunteering for the study may indicate an interest in emotional illness, increasing the likelihood of finding a mental disorder. In fact, subjects who volunteer to act as normal controls for psychiatric research are often not normal, and many have lengthy histories of mental disorder.[23] On the other hand, since a feature of EI is rejection of a psychiatric diagnosis, our recruitment efforts may have led to a selective bias against those with a mental disorder. Our case recruitment, unlike that reported in other studies, was not centered around persons referred for psychiatric evaluation or evaluation for workers' compensation claims. In fact, only three persons in our study were recruited through our psychiatric outpatient clinic. All three happened to have mental disorders (two had somatization disorder and one had obsessive-compulsive disorder). Excluding these three patients from the study would not have significantly changed the results. Despite methodologic differences between this study and others, the results are remarkably similar, further strengthening our conclusions. Although our subjects' mean age at interview was older than in the other studies, all the studies report a similar gender ratio, polysymptomatic representation, and a significant percentage of subjects with symptoms or a diagnosis of mental disorder.

It could be argued that our control group was selected to weed out mentally ill persons, since we started with a psychiatrically normal proband and then interviewed all first-degree relatives. This bias would exaggerate the differences between cases and controls. However, the rates of mental disorder in our control group are comparable to national rates reported in the Epidemiologic Catchment Area survey.[33]

Conclusions

Patients with EI who consented to a diagnostic interview were significantly more likely than controls to meet lifetime criteria for a major mental disorder, especially mood disorders, anxiety disorders, and somatoform disorders. This finding suggests that psychiatric diagnoses must be considered as an explanation for patients with multiple ill-defined symptoms in the absence of clinical or laboratory findings. These data also suggest that traditional medical practitioners are probably insensitive to patients with vague complaints and need to develop new approaches to keep them within the medical fold. The study subjects clearly believed that their clinical ecologists had something to offer them that others did not: sympathy, recognition of pain and suffering, a physical explanation for their suffering, and active participation in medical care.

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was involved in support groups, and had many friends (most of whom had EI).

Clinically, the patient was found to satisfy the criteria for somatization disorder. Review of his medical records showed a history of multiple psychiatric evaluations, including previous diagnoses of conversion disorder and atypical somatoform disorder.

COMMENT

Several conclusions can be drawn about persons with a diagnosis of EI. They are mostly women, tend to be well educated, are interested in their diagnosis, attend support groups, read EI literature, and develop friendships with fellow sufferers. As Brodsky[17] observed, these patients develop a lifestyle organized around their illness. Almost all subjects reported a dissatisfaction with traditional medical practitioners. They believed they were mistreated or misled by the medical community, which they felt was either ignorant or unsympathetic to EI concepts. Many felt they had been made to feel like "psychiatric cases." Nearly two thirds were still under the care of a clinical ecologist, and nearly three fourths were satisfied with their diagnosis and treatments. A few voiced dissatisfaction, however. The woman with obsessive-compulsive disorder mentioned in the introduction of this report felt, in retrospect, that she had been duped by her physician.

Mood disorders (especially major depression), anxiety disorders, and somatoform disorders were the most common disturbances (Table 4). Because of the polysymptomatic nature of EI, we were surprised that more patients did not meet the criteria for somatization disorder, which the description of EI as portrayed in the EI literature seems to resemble most closely. Many patients had a history of multiple somatic complaints but either had an age of onset past 30 years or had too few symptoms to fulfill the diagnostic criteria for somatization disorder. Clinically, many patients would have fulfilled the diagnosis of hypochondriasis, but this disorder is not included in the DIS.

After interviewing the subjects we put together the following scenario: Dissatisfied with either no explanation or a psychiatric one to explain physical symptoms (eg, palpitations during a panic attack), the subject would shop for a doctor and eventually seek treatment from a physician sympathetic to EI concepts. The physician would then connect the physical symptoms with presumed chemical exposure, evidence of chronic candidiasis, or some other form of EI and prescribe treatment. Any improvement was then attributed to the treatment.

The data do not address causality, but significantly more study subjects than community controls met lifetime criteria for a major mental disorder. The DIS results indicate a *lifetime* diagnosis but do not specify when the psychiatric disorder developed in relation to the diagnosis of EI. However, our interviews occurred, on average, nearly 6 years after the EI diagnosis, so symptoms occurring at the time of diagnosis may not have much relevance to the condition at the time of interview. Many of our subjects were psychiatrically well at the time of interview, and nearly 35% had never experienced an anxiety, mood, or somatoform disorder. Several patients (five [36%] of 14 patients) with a history of a mood or anxiety disorder were free of symptoms when interviewed, consistent with the variable course these disorders take. Three of four subjects with somatization disorder were symptomatic at the time of the interview. Since somatization disorder is a chronic condition, this finding was not unexpected.[28] Both symptomatic and symptom-free patients seemed pleased with the results of EI treatment.

Literature Review

Our findings are consistent with those of five case series already reported.[14,15,17-20] In each series, the patients were middle-aged, predominantly female, and polysymptomatic. In four studies, the frequency of subjects reported to have psychiatric diagnoses or symptoms ranged from 42% to 100%.[14,17,19,20]

Brodsky[17] reported eight cases referred for evaluation for a pending disability claim. Most of these patients had a history of doctor shopping for evaluation or recurrent physical complaints and ended up seeing the same network of clinical ecologists. Most led a lifestyle organized around the illness; they had stopped working and spent a great amount of time reading about allergies, taking tests for sensitivity, planning diets, and attending to their compensation claims. Stewart and Raskin[14] reported 18 cases referred to a university occupational medicine clinic. All 18 subjects in their study met the *DSM-III*[28] criteria for a psychiatric diagnosis. Seven subjects met the criteria for somatization disorder, four had an anxiety disorder, three had an affective disorder, three had schizophrenic disorders, and one had a personality disorder. Pearson et al[18] studied 23 patients referred to an allergy clinic for suspected food allergy as a cause of their symptoms. Four had confirmable food allergies and displayed typical atopic symptoms, such as asthma or urticaria. A psychiatric diagnosis was assigned to all but one of the remaining patients. The most common diagnoses were neurotic depression, neurasthenia, and hysterical neurosis. The authors noted that, for many patients, the food allergy had attained the status of an "overvalued" idea (ie, a belief that is maintained despite evidence to the contrary). Terr,[20] extending an earlier report,[17] reviewed the medical records of 90 workers who had filed disability claims on the basis of a diagnosis of EI. Psychiatric diagnoses were reported in 38 subjects, including depression, anxiety, somatization disorder, functional gastrointestinal illness, and "stress."

Another study is relevant to our findings. Sparks et al[19] evaluated a case series of 53 aerospace workers who filed compensation claims for a work-related illness characterized by multiple somatic and neuropsychiatric complaints, although EI had not been diagnosed. These investigators found that 39 (74%) of the workers met the criteria for major depression, panic disorder, or both. No physical cause for the symptoms was found, and the authors concluded that the psychiatric diagnosis probably explained many of the physical and emotional symptoms reported by the subjects.

Complications of EI Treatment

Among the most devastating complications of EI treatment is social withdrawal, which is often a direct result of recommendations to avoid chemicals.[13,14,17] Avoidance can lead to severe social isolation, which the subject justifies as a prudent measure to avoid contact with offending chemicals found in friends' or relatives' houses, clothing, or perfume. One study subject had not left his home in 2 years, following his clinical ecologist's advice. In fact, 22 (85%) of the study subjects reported being less social since developing the disorder.

The diagnosis also leads to significant interference in work and role functioning. Most study subjects were at least temporarily sidelined by the disorder, but several were disabled, and two were engaged in compensation claims. It is difficult to ascertain whether subjects were no longer working due to their symptoms or as a result of their clinical ecologist's recommendations; in any event, the result is disabling.

The disorder can also lead to expensive treatments. One subject, for example, spent more than $40 000 to rebuild her home according to EI standards. Less ambitious projects, such as adding a "safe" room to a house, can still cost

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Table 3.—Environmental Illness Treatment at the Time of the Study and Effect on Life-style

Currently seeing a clinical ecologist, No. (%)	16 (62)
Recommended therapies, No. (%)*	
Avoidance	25 (96)
Diets	24 (92)
Vitamins/primrose oil/ supplements	20 (77)
Oxygen/charcoal mask	20 (77)
Injections/sublingual drops	18 (69)
Safe room/house	18 (69)
Nystatin	11 (42)
Douching/enemas	9 (35)
Other	23 (88)
Ever hospitalized for environmental illness, No. (%)	13 (50)
Receive disability compensation, No. (%)	2 (8)
Workers' compensation claimant, No. (%)	3 (12)
Knowledge of illness, No. (%)*	
Reads about environmental illness	25 (96)
Joined support group	12 (46)
Friends/acquaintances with environmental illness, No. (%)	24 (92)
Life-style changes, No. (%)*	
Less social	22 (85)
Stopped working	18 (69)
Advised to move/change climate	7 (27)
Satisfaction with treatment, No. (%)	
Pleased with environmental illness treatment	19 (73)
Pleased with traditional medical care	3 (12)

*Multiple responses were allowed.

Table 4.—Lifetime Prevalence of Major Mental Disorders

Disorder	No. (%) of Subjects: Cases (n=23)	Controls (n=46)	Odds Ratio (95% Confidence Interval)
Mood disorder			
Major depression*	7 (30)	3 (7)	6.3 (1.4-27.3)
Dysthymia	2 (9)	3 (7)	1.4 (0.2-8.8)
Any affective disorder†	9 (39)	6 (13)	4.3 (1.3-14.2)
Substance use			
Alcoholism	0	3 (7)	...
Drug abuse/dependence	1 (4)	1 (2)	2.0 (0.1-34.3)
Any substance abuse	1 (4)	4 (9)	0.5 (0.1-4.5)
Anxiety disorder			
Panic/agoraphobia	3 (13)	1 (2)	6.8 (0.7-68.9)
Generalized anxiety	3 (13)	5 (11)	1.2 (0.3-5.7)
Social phobia	1 (4)	1 (2)	2.0 (0.1-34.3)
Simple phobia	5 (22)	4 (9)	2.9 (0.7-12.1)
Obsessive-compulsive disorder	1 (4)	1 (2)	2.0 (0.1-34.3)
Any anxiety disorder‡	10 (43)	8 (17)	3.7 (1.2-11.2)
Somatization disorder§	4 (17)	0	...
Any mood, anxiety, or somatoform disorder‖	15 (65)	13 (28)	4.8 (1.6-13.9)

*For cases vs controls, $P = .013$ by Fisher's Exact Test.
†For cases vs controls, $P = .013$, $df = 1$, $\chi^2 = 6.1$.
‡For cases vs controls, $P = .02$, $df = 1$, $\chi^2 = 5.4$.
§For cases vs controls, $P = .01$ by Fisher's Exact Test.
‖For cases vs controls, $P = .003$, $df = 1$, $\chi^2 = 8.7$.

treatments seemed to be limited only by the imagination and resourcefulness of the clinician. Over two thirds of the subjects had been advised to remodel their rooms or create a "safe room," and three fourths had been advised to wear oxygen or charcoal masks when they could not avoid coming into contact with offending agents. Half of the respondents had been admitted to special hospitals or to "environmental control units" at general hospitals. Nearly all the subjects had read extensively about EI, and nearly half had joined a support group. Over half of the subjects reported having stopped working at least temporarily because of the illness, and most were spending less time in social activities as a result of the illness. Three subjects (12%) were involved in workers' compensation claims, and two subjects (8%) were receiving disability insurance. Over one fourth of the subjects had been advised to move to a different location because of the illness (eg, the mountains or seaside), and 24 subjects (92%) reported having friends with the condition (often met through a support group). Nearly three fourths (73%) of the subjects were pleased with their current treatment. Only three subjects (12%) indicated that they were satisfied with traditional medical therapy before the diagnosis of EI.

Results of the DIS

Table 4 compares cases and controls for lifetime prevalence of major mental disorders based on results of the DIS. Affective disorders (especially major depression), anxiety disorders, and somatoform disorders are greatly overrepresented in the EI sample.

The total number of *DSM-III* symptoms covered by the DIS and reported by study subjects was significantly greater than the number of symptoms reported by controls (27.7 ± 11.4 vs 9.1 ± 7.8, $t = -8.0$, $df = 67$, $P = .0001$). The number of *DSM-III* lifetime diagnoses in study subjects was also significantly greater among cases than among controls (1.6 ± 0.9 vs 0.9 ± 1.1, $t = -2.6$, $df = 67$, $P = .01$). One study subject (4%) was free of all disorders according to the DIS compared with 19 controls (41%) ($\chi^2 = 10.2$, $df = 1$, $P = .001$).

Report of a Case

A 29-year-old former shop clerk reported that he suffered from "toxic brain syndrome," a disease that made him especially sensitive to pollutants in the environment. He grew up on a farm and believed that the disorder began with a sensitivity to farm chemicals but had now spread so that he had severe reactions to anything from underarm deodorant to perfume. Sometimes the pollutants affected his muscles, causing weakness and fatigue or difficulty walking. At times the chemicals seemed to affect his brain, causing mental confusion ("brain fag"), speech difficulties, and even loss of consciousness.

The patient was well until about 3 years before the interview and had been working steadily but had to quit because of his symptoms. Since then, he had been examined or treated at many hospitals, including a special hospital in the Southwest that treats EI. One of the solutions his physician recommended was to move to a high-altitude or desert location. Since the patient had few resources of his own, several service organizations in his community banded together to raise money so he could move to Phoenix, Ariz.

The patient, a pleasant and friendly young man, sat in a wheelchair during the interview. He explained that he had been an athlete in high school, but, due to muscle aches, fatigue, and weakness, he now required a wheelchair to get around. He observed that his condition had improved since moving to Arizona, due to the drier air and more stable barometric pressure, which his physician had implicated as a source of his symptoms. He was receiving a variety of treatments, including hypoallergenic vitamin therapy, a carefully planned rotation diet, an oxygen mask when needed, and special drops he took sublingually to "build immunity." He lived in a "safe" trailer that was free of carpeting and drapes and had ceramic or wood surfaces. The main treatment, he noted, was to avoid chemicals that are bad for him.

The patient received disability insurance, which started after he quit working. He was pleased with his current medical regimen and had been dissatisfied with his traditional physicians, since they were unable to make a diagnosis or told him that the symptoms were psychologically based. Since his move, he had remained socially active,

posted at two local health food stores. As required by our Institutional Review Board, we informed prospective subjects that we were conducting a study on the "emotional profile of persons diagnosed as having chronic yeast disease, environmental allergy syndrome, 20th century disease, or the multiple chemical hypersensitivity syndrome."

Assessment Procedures

All subjects were evaluated by a trained research assistant (A.R.) using the Diagnostic Interview Schedule (DIS),[21] which has established reliability for the diagnosis of current and past major mental disorders using criteria from the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III)*[22] and the Structured Interview for *DSM-III* Personality Disorders,[23] which has demonstrated adequate reliability for many *DSM-III* personality disorders. In addition, we administered a semistructured instrument to elicit information on the subjects' past and present occupational, educational, and marital status; on the subjects' interactions with the health care system, including health care providers and treatment recommendations; on the occurrence of psychological stress or social constraints placed on the subjects due to the illness; and on the subjects' opinion of their illness and motivation for seeking treatment. We also asked the subjects to complete several self-report instruments, including the Illness Behavior Questionnaire,[24] an inventory that assesses somatic concern and hypochondriacal behavior; the Symptom Checklist 90,[25] an instrument that is used to assess a patient's concern with somatic symptoms; and the Inventory to Diagnose Depression,[26] an instrument used to assess and diagnose major depression. Data on personality and illness measures will be reported separately.

Controls

Controls were recruited in the course of another study. As part of a family study of obsessive-compulsive disorder, we identified 28 psychiatrically normal subjects who had been screened with the Schedule for Affective Disorders and Schizophrenia–Lifetime Version.[27] We then systematically interviewed all first-degree relatives using the DIS and the Structured Interview for *DSM-III* Personality Disorders. These 129 first-degree relatives represent a relatively unbiased community sample. From these 129 potential controls, we identified 46 who were age- (within 5 years) and sex-matched with 23 subjects with EI. (Only 23 of the 26 cases consented to the DIS.) The average age of controls was 50.1 (13.2, SD) years compared with 50.3 (13.4) years for subjects (n = 23).

Table 1.—Sociodemographic Profile of 26 Patients With Environmental Illness

Age, y*	
Mean	49.1 (13.0)
Range	27 to 78
Sex, No. (%)	
F	23 (88)
M	3 (12)
Marital status, No. (%)	
Married	23 (88)
Single	3 (12)
Education, y*	
Mean	14.6 (2.8)
Range	11 to 21
Best occupation, No. (%)	
White collar/clerical	13 (50)
Teaching	6 (23)
Small business/managerial	3 (12)
Professional	3 (12)
Housewife	1 (4)
Source of recruitment, No. (%)	
Support group	9 (35)
Occupational medical clinic	3 (12)
Psychiatric clinic	3 (12)
Friend in study	3 (12)
Advertisement	1 (4)
Other	7 (27)

*Values are mean (SD).

Table 2.—Onset, Diagnosis, Symptoms, and Triggering Events of Environmental Illness

Age at initial diagnosis, y*	
Mean	43.4 (11.0)
Range	25 to 74
Diagnosis, No. (%)†	
Environmental allergy/ environmental illness	18 (69)
Multiple chemical hypersensitivity	4 (15)
Candidiasis/yeast disease	7 (27)
Other	2 (8)
Clinician, No. (%)†	
1	6 (23)
2	4 (15)
3	5 (19)
4	3 (12)
5	4 (15)
6	8 (31)
Other	5 (19)
Age at initial symptoms, y*	
Mean	28.7 (14.8)
Range	4 to 59
Initial complaint, No. (%)†	
Respiratory	15 (58)
Neurologic (including headache)	10 (38)
Fatigue/weakness	9 (35)
Pain	7 (27)
Psychiatric	7 (27)
Gastrointestinal	3 (12)
Swelling	3 (12)
Other	8 (31)
Triggering event, No. (%)†	
Fumes at work/home	13 (50)
Pesticides/insecticides	7 (27)
Oral contraceptives/pregnancy/ hysterectomy	5 (19)
Psychological stress	4 (15)
Antibiotics	3 (12)
Other	8 (31)
No trigger	1 (4)

*Values are mean (SD).
†Multiple responses were allowed.

Statistical Analysis

Statistical analysis consisted of a matched triplet method in which a case was matched with two controls.[28] Odds ratios with 95% confidence intervals were calculated for categorical variables. The odds ratio is an estimate of the magnitude of risk for cases compared with controls. For example, an odds ratio of 4.0 implies that the case has a fourfold greater risk for a variable of interest (eg, major depression) than a control subject. This assumes that the case and the controls have been matched on important characteristics.

RESULTS

We recruited 26 subjects (23 women and 3 men), with a mean age of 49.1 years (range, 27 to 78 years). Other sociodemographic data are presented in Table 1. Nine subjects (35%) were recruited through participation in a support group. A minority of subjects were recruited through the occupational medicine and psychiatric clinics or by other means.

Sixteen subjects (70%) reported that their diagnosis was listed as "environmental allergy," but "multiple chemical hypersensitivity" and "yeast disease" (or "candidiasis") were listed by many (Table 2). Six practitioners made the diagnosis for 22 subjects (85%). In fact, a diagnosis of EI was made for six subjects by one internist at a major clinic. Although two patients reported that they had had the illness their "entire life," the mean age of first symptoms of illness in the remaining 24 patients was 28.7 years (range, 4 to 59 years). The most frequently recalled initial complaints were respiratory problems; neurologic symptoms, including headaches; fatigue or weakness; pain; and psychiatric symptoms (eg, depression). The mean age at diagnosis of EI was 43.4 years (range, 25 to 74 years). Triggering events identified by the subjects were quite varied. The most frequently cited triggering events included exposure to fumes at home or work, exposure to insecticides or pesticides, hormonal shifts due to use of oral contraceptives, pregnancy or hysterectomy, antibiotics, and psychological stress.

Of those surveyed, 16 subjects (62%) were still under the care of their clinical ecologist (Table 3). Recommended therapies for their disorders included avoidance of offending agents, rotation or other special diets (yeast-free, reduced sugar, food additive–free, etc), vitamins or other supplements (eg, garlic), oxygen or charcoal-filter masks, spending time in "safe" rooms, subcutaneous or sublingual administration of serotonin or histamine (ie, "symptom neutralization"), special douches or enemas (eg, yogurt, spring water, coffee), and many other treatments. The variety of

POSTING & NOTIFICATION REGULATION SUMMARY

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STATE	WHO MUST POST AND/OR NOTIFY	SIZE OF SIGN	PLACEMENT OF SIGN	INFO TO CUSTOMER	CONTRACTS	NOTIFICATION	MISC.
CT	C, LC, GC, T&S, HO, P, O	4 x 5 12 x 12 GC	1, 2	2	NO	4	NOT IN EFFECT YET
CO	C, LC, GC, T&S, O	4 X 5	1	N/A	NO	4	
FL	C, LC, GC, T&S	4 x 5	1	N/A	NO	4	NOT IN EFFECT YET
IL	C, LC, T&S, GC	4 x 5 8-1/2 x 11 GC	1, 2GC	2	NO	1, 2, 3	WASH WATER RINSEATE COL.
IA	C, LC, GC T&S, RW, O	4 x 5 LC, T&S 8-1/2 x 11 GC 10 x 12 RW	1	3	NO	1, 2, 4	
KY	C, LC	4 x 5	1	2	NO	1, 2, 3	AT TIME OF CONTRACT GIVE CUSTOMER INFO ON LAWN CHEMICALS
MA	C, LC	4 x 5	1	1, 2	NO	1, 3	
ME	C, LC, T&S	4 x 5	1	N/A	NO	3	
MD	C, LC, GC O, T&S	4 x 5	1, 2GC	1 or 2	NO	3, 4	
MN	IF LABEL REQUIRES FOR HUMAN RE-ENTRY	N/A	N/A	N/A	YES	N/A	1/91
NH	C, LC, GC	8-1/2 x 11	1	1	NO	1, 3	NON-RESIDENTIAL SITES
NJ	C, LC, T&S, GC PC	NOT SPECIFIED	1	1, 3	NO	N/A	
NY	C, LC, T&S	4 x 5	1	2	YES	N/A	1983, 1987 STATUTE IN EFFECT
OH	C, LC, GC, O	4 x 5	1	2	NO	1, 2, 3	
PA	C, LC, RW T&S, PC, A, GC	N/A	N/A	1, 3	NO	1, 2, 3, 4	GC CAN USE PLACARDS
RI	C, LC, O	4 x 5	1	1, 2	NO	1, 2, 3	

MUST POST; C = Commercial Applicators P = Private Applicators HO = Home Owners GC = Golf Courses
T&S = Tree & Shrub LC = Lawn Care PC = Pest Control O = Other RW = Right of Ways
A = Agriculture

CEMENT OF SIGN; 1 = At Conspicuous Points of Access 2 = At Specific Intervals

ORMATION TO CUSTOMER; 1 = Prior to Application 2 = At Time of Application 3 = Upon Request
THIS INCLUDES ITEMS SUCH AS; (ie) name & license no. of applicator, label, date & time of application, precautions, post application requirements, advanced notice upon request

IFICATION; 1 = Customers 2 = Neighbors (Adjacent) 3 = Upon Request 4 = Central Registry (statewide or local)

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AMTOP
Association of Montana
Turf and Ornamental Professionals, Inc.

P.O. Box 375 • Milltown, MT 59851

February 15, 1991

AMTOP, The Association of Montana Turf and Ornamental Professionals represents the green industry across the state of Montana. Our membership includes growers, landscapers, lawn care companies, arborists, pest control operators, golf courses and park departments. Most of AMTOP's members are licensed as commercial pesticide applicators.

AMTOP firmly opposes the passage of HB637. This bill is ineffective in accomplishing its stated goal of informing the public of pesticide applications. It is also incorrect in its assumption that all pesticide applications in general are a threat to human health.

PROBLEMS CONCERNING HB637

-The definative phrase in HB637 "only in cities and towns" implies that location makes a product dangerous, when in fact, being inside city limits does not affect the toxicity of any product.

-HB637 promotes the idea that pre-posting of applications will reduce the instances of improperly applied pesticides, where in fact, the only way to promote the correct use of pesticide is through training, education and the strict enforcement of existing laws.

-HB637 arbitrarily decides the time frame for safe re-entry after a pesticide application, ignoring the re-entry statement found on all pesticide labels; this statement, being of prime concern to the E.P.A. at the time of product approval and registration.

-HB637 fails to guarantee that posting signs forty-eight hours in advance of pesticide applications will be an effective means of notifying concerned individuals.

-HB637 fails to address the fact that neighborhood children may play with, remove, or even relocate the signs.

-By having each application posted for nearly one week, HB637 promotes unnecessary fear, distrust and paranoia without increasing the public safety.

Prior to the introduction of this bill AMTOP proactively developed a position statement concerning posting and notification. Carefully reviewing the sixteen existing state laws dealing with posting and notification, AMTOP was able to learn that there are many states using proven effective measures to address this issue.

One such method is to create a state administered registery. In such a registry, anyone having been certified by a licensed medical physician to have allergic reactions or other valid medical reactions to the application of turf or ornamental products would have their names, addresses, and telephone numbers listed. The appropriate state agency (The Department of Agriculture) should be required to develop, maintain and distribute this registry to applicators.

The applicator should be required to provide prior notification to the registered individual in writing, in person, or by phone prior to making any pesticide application to an abutting or adjacent property.

This type of notification program has proven to be highly effective and relatively inexpensive to administer.

None of the sixteen existing state laws regarding posting require the posting to be done prior to the application. AMTOP sees no benefit of posting prior to the application and HB637 fails to show any benefit.

HB367 is ill-planned, costly, ineffective, and its goals can be better achieved by other methods. AMTOP asks that you vote against this bill. The idea of compromise is unacceptable to the bill's sponsor and is unacceptable to AMTOP. A new bill would be necessary to correct its many flaws. I ask that you read the attached AMTOP position statement concerning posting and notification, and after thorough consideration, vote against HB637.

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EXHIBIT 25
DATE 2-15-91
HB 637

ASSOCIATION OF MONTANA TURF AND ORNAMENTAL PROFESSIONALS

POSITION STATEMENT ON PRENOTIFICATION AND POSTING

I. THE ISSUE

The private and professional use of pesticides in the agricultural, structural pest control, industrial vegetation control and the turf and ornamental care industries has steadily and significantly increased since 1970. During the past decade, the rapidly growing professional turf and ornamental care industry has become firmly established and increasingly visible to the public. During this period, a growing segment of the public has singled out the professional turf and ornamental care industry by claiming that the application of turf and ornamental care products to lawns and landscapes, particularly the application of pesticides, causes a variety of health problems to certain individuals. Even though medical science has not verified these claims and has not documented a case of anyone being injured from the proper application of turf and ornamental care products, an increasing number of state and local governments have introduced new legislation and regulation directed at the turf and ornamental care industry. This new legislation and regulation almost universally includes requirements that professional applicators notify interested parties prior to an application and that a sign be posted on the property following a turf and ornamental care application.

The turf and ornamental care industry is faced with a growing public perception that professional turf and ornamental care activities present risks to human health and the environment. The public policy issue confronting the turf and ornamental care industry is the establishment of reasonable requirements and standards at the state level that ensure the protection of both public health and safety and the environment.

II. BACKGROUND

The turf and ornamental care industry uses less than 4%* of all pesticides sold in the United States and applies almost exclusively "general-use"

*Extracted from:

Reference Volume of the Agrochemical Service (Wood, KcKenzie, May '89)
Professional Market for Pesticides and Fertilizers Kline, 1988)

pesticides. General-use pesticides are commonly available for purchase not only by the professional turf and ornamental care industry, but also by the general public. Anyone can readily purchase general-use pesticides at retail garden stores, hardware stores, grocery stores and often drug stores. When these pesticides are used according to label directions, either by the do-it-yourselfer, for example, or a professional applicator, the application rate of the active ingredients in the dilute pesticides is identical. Restricted-use pesticides used by the professional turf and ornamental care industry are applied in isolated situations by professional applicators who are certified to do so pursuant to federal and state laws and regulations.

III. POSITION

The Association of Montana Turf and Ornamental Professionals (AMTOP) supports reasonable regulation at the state level of the handling and application of turf and ornamental care products consistent with federal statutory and regulatory requirements. AMTOP believes that reasonable regulation is necessary to ensure continued and improved protection of both public health and safety and of the environment.

AMTOP supports:

A. Prior notification of concerned customers and certain specific individuals of scheduled applications of turf and ornamental care products to property;

B. Posting a marker on the applied location at the time of treatment to inform customers and the general public that turf and ornamental care products have been applied;

C. Providing certain product information and post application instructions to the customer at the time of application.

AMTOP opposes the enactment of any regulations or ordinances controlling turf and ornamental care products by governmental units below the state level.

IV. GUIDELINES

A. PRENOTIFICATION

1. AMTOP supports state requirements for applicators of turf and ornamental care products to notify prior to scheduled applications:

   a. Customers of an applicator who notifies the applicator that they desire prior notification;

b. Anyone whose property abuts or is adjacent to an applicator customer's property who notifies the applicator that he/she wants prior notification;

c. Anyone whose property abuts or is adjacent to an applicator customer's property who has his/her name placed on a state administered "registry" as having been certified by a licensed medical physician to have allergic reactions or other valid medical reactions to the application of turf and ornamental care products. The appropriate state agency should be required to develop, maintain, and distribute to applicators the "registry." The "registry" should contain the names, addresses, and telephone numbers of registered individuals.

2. The applicator should be required to provide prior notification to the above described concerned individuals in writing, in person, or by telephone prior to scheduled applications of turf and ornamental care products. When a concerned individual is inaccessible up to the time of scheduled application, the applicator should be required to leave a written notice at the concerned individual's address. AMTOP believes applicators should be given reasonable flexibility in the amount of time prior to application that notifications are to be made.

3. AMTOP believes prior notification to concerned individuals should include:

   a. Date and address of the scheduled application;

   b. Name and telephone number of the applicator;

   c. The applicator's state license number, where applicable.

4. Should concerned individuals request written information regarding the turf and ornamental care products to be applied, AMTOP believes that manufacturer prepared Product Information Sheets, OSHA required Material Safety Data Sheets (MSDS) or, if applicable, FIFRA required pesticide label information should be considered sufficient literature.

B. **POSTING**

1. AMTOP supports <u>state</u> requirements for applicators of turf and ornamental care products to post an application marker at the usual point of entry of a treated property at the time the turf and ornamental care products are applied.

2. Application markers should consist of a sign with the following specifications:

   a. The sign should be four (4) inches by five (5) inches, horizontal or vertical, attached to the upper portion of a dowel or other supporting device with the bottom of the marker extending no less than twelve (12) inches above the turf;

   b. The sign should be constructed of durable material sufficient to withstand weather conditions for at least 24 hours;

   c. The sign should be white with lettering in a contrasting color, with all pertinent information on the front of the sign;

   d. The sign should read in letters not less than 3/8 inch, **"TURF OR ORNAMENTAL APPLICATION - STAY OFF UNTIL DRY."** The sign should also display a picture depicting the required message and an instruction to the customer to remove the sign the day following application. The sign may also display the name, logo and service mark of the commercial applicator.

3. The application marker should be removed and discarded by the property owner or resident, or such person authorized by the property owner or resident, on the day following application.

C. **INFORMATION PROVIDED TO A CUSTOMER AT THE TIME OF APPLICATION**

AMTOP supports the providing of the following information to a customer by the professional applicator at the time of application:

1. Name and telephone number of the professional applicator;

2. The name and, if applicable, the state applicator license number of the individual actually making the application;

3. The common or brand name and the purpose of each turf or ornamental care product applied;

4. The range of concentration of end use for each turf or ornamental care product applied;

5. Any post application instructions that may be contained on the label of any pesticides applied as they pertain to the end use concentration.

Doug Johnson, Administrator

EXHIBIT 10
DATE 2-15-91
HB 637

H.B. 637 "An Act Requiring Notification of Pesticide Applications Within the Boundaries of Incorporated Cities and Towns."

The Cascade County Weed and Mosquito Board is opposed to the passage of this bill. If enacted it would almost make it impossible to carry out our weed and mosquito control programs. Presently many areas within incorporated cities and towns in Cascade County are treated for noxious weeds and mosquitoes. These treatments can only be made when weather conditions are favorable. Often the weather changes suddenly, i.e. thunderstorms, etc., requiring that chemical operations be postponed and the posting requirements set forth in this legislation could not be met.

Timing of chemical applications is critical for control of mosquitoes. Larvae can develop very quickly in warm weather and if they were not found until their third or forth instar, the late stages of their development, they would hatch and fly away before a sign could be posted and the waiting period of 48 hours had passed. This would shift more mosquito control emphasis to adulticiding--misting or fogging--which requires that large areas of a city or in some cases the whole community be sprayed. The net result is that more chemical is used less effectively over a larger area resulting in more exposure. Posting for adulticiding could also be very difficult and costly.

Weed control in cities and towns would also be adversely affected. Many rights-of-way and public lands are treated for noxious weeds. Many times the treatment may be single plants or very small patches. The cost to sign these sites would be more than the cost of the treatment. It would also prevent a crew from spraying a previously unknown site when it was found. They would have to install a sign, wait 48 hours, make an additional trip back to treat the area, wait 72 hours, then make an additional trip back to remove the sign. The requirements would be the same for any private lands treated. All of these costs in addition to treatment costs

would then be passed on to the property owner. This may preclude many private land owners from voluntarily controlling their noxious weeds. The districts would then be forced to "serve notice" to these property owners through procedures set forth in the statutes. This is a costly procedure for both the district and the property owner and the costs of the notification requirements would again be added. This would place the county weed districts and the property owners in an adverse position. This would set back the weed control efforts of the weed districts many years.

The question of liability also arises. What happens if an area is posted, the neighbor or whoever leaves to avoid any exposure, then weather conditions prevent application so it is postponed until the next day. Meanwhile, the neighbor returns and is present when the application is made. Will the applicator be subject to litigation even though there may have been no actual exposure to the neighbor? Posting an area prior to application may also make it possible for a person to plan to be present or near by when an application is made, and then file suit because they contend they were exposed. The applicator, who may be the landowner, would have to prove that this person was not affected. This may sound a bit far fetched, but it could easily happen, especially if the applicator was perceived to be wealthy or have the "deep pocket" of government.

Because of the severe impact on our mosquito or weed control programs, we would ask that you actively oppose this bill.

EXHIBIT 26
DATE 2-15-91
HB 637

Montana Mosquito and Vector Control Association Comments on Requiring Notification of Pesticide Applications (H.B. 637)

City/County Mosquito Control Districts in Montana have a long history of providing safe and effective public health protection from pest and disease bearing mosquitoes. Several encephalitis outbreaks and numerous invasions by large mosquito populations have been terminated because of safe and timely applications of insecticide in and around communities. Unless a public health exemption were incorporated in HB 637, local mosquito or vector control programs would be less effective and more expensive for the following reasons:

1) Ideal conditions for controlling adult mosquitoes with space sprays occur at infrequent intervals and licensed applicators must be in a position to spray whenever these conditions are present. Spraying under less than ideal conditions means that more applications are required and effectiveness is reduced.
2) By controlling mosquito larvae in the water where they develop, more mosquitoes are killed over longer periods of time while applying less insecticide to smaller areas. If a 48 hour waiting period is required, more than 1/2 will escape from the water where they develop and spread out. Control will become more expensive and less effective.

From the perspective of those involved in mosquito control there is no justification for additional regulation. As evidence consider the following:

1) No adverse public health effects have been documented in any community and no adverse environmental effects have been traced to mosquito control in Montana during at least the last 20 years.
2) More than ample protective mechanisms and regulations are already in place to include extensive testing of new chemicals and retesting of older products prior to reregistration. (Already insecticide manufacturers have not reregistered some products that we used without incident because of the cost of conducting studies. Alternatives cost more and are less effective).
3) Products remaining in the hands of our well trained and licensed applicators provide a large margin of safety to the public and non-target organisms. (The bacterium, BTI, affects only blackfly larvae and earlier larval stages of mosquitoes; insect growth regulators affect only insect maturation; and Arosurf, a surface alcohol, only affects those insects that breathe at the water surface. Abate, an organophosphate insecticide, is used in drinking water by the World Health Organization in malaria suppression programs and has an LD_{50} of 8600 mg/kg compared to LD_{50}'s of 192, 1600 and 3000 for caffeine, aspirin and salt).

We believe that HB 637 would unnecessarily increase city/county mosquito control program costs and would reduce the effectiveness of these programs. Some public health risks would be increased.

TABLE 1: Toxicity Categories for Labeling Pesticides

Category	Signal Word Label	LD_{50} mg/kg	Probable Lethal Dose for 150-lb. man
I	Danger	0 - 50	Taste - teaspoon
II	Warning	50 - 500	Tsp - tablespoon
III	Caution	500 - 5000	1 oz. - 1 pint
IV	None	Over 5000	Over 1 Pint

EXHIBIT 26
DATE 2-15-91
HB 637

TABLE 2: Acute Oral Toxicities to Test Animals

Products	Approximate LD_{50} (mg/kg of body wt.)	Approximate Dose in pounds (for 150 lb. person)
Aspirin	1200	.18
Atrazine	3080	.46
Banvel	1700	.26
Caffeine	200	.03
Household Bleach	4600	.70
Malathion	1200	.18
Parathion	4	.0006
Paraquat	150	.022
Roundup	4300	.65
Table Salt	3000	.45
Tordon 22K	8200	1.23
Vitamin D	10	.0015
2,4-D	500	.075

Note: The above values are estimations based on laboratory research conducted on various animal species. As such the data here are estimates only.

TABLE 3: Parts Per Million in Perspective

1 PPM = 1 INCH IN 16 MILES
OR 1 MINUTE IN 2 YEARS
OR 1 CENT IN $10,000
OR 1 OUNCE OF SALT IN 31 TONS OF POTATO CHIPS
OR 1 BAD APPLE IN 2000 BARRELS.

Parts per Billion:

THE EARTHS DIAMETER IS 7,927 MILES. IF A PERSON WALKED AROUND THE EQUATOR 7 1/2 TIMES, THEN 1 FOOT = 1 PPB.

1 BILLION BB's LINED UP SIDE BY SIDE ALONG A HIGHWAY WOULD EXTEND FROM BILLINGS MONTANA TO WASHINGTON DC.

1 OUNCE OF BEER EQUALS 1PPB IF A PERSON DRANK 1 CASE OF BEER EACH DAY FOR 9513 YEARS.

1 SECOND IN 32 YEARS = 1 PPB.

Table 2.98--Lifetime risk of death or cancer resulting from everyday activities (from Crouch and Wilson (1982)).

Activity	Time to accumulate a one-in-a-million risk of death	Average annual risk per capita
Living in the United States		
Motor vehicle accident	1.5 days	2×10^{-4}
Falls	6 days	6×10^{-5}
Drowning	10 days	4×10^{-5}
Fires	13 days	3×10^{-5}
Firearms	36 days	1×10^{-5}
Electrocution	2 months	5×10^{-6}
Tornados	20 months	6×10^{-7}
Floods	20 months	6×10^{-7}
Lightning	2 years	5×10^{-7}
Animal bite or sting	4 years	2×10^{-7}
Occupational Risks		
General		
manufacturing	4.5 days	8×10^{-5}
trade	7 days	5×10^{-3}
service & government	3.5 days	1×10^{-4}
transport & public utilities	1 day	4×10^{-4}
agriculture	15 hours	6×10^{-4}
construction	14 hours	6×10^{-4}
mining and quarrying	9 hours	1×10^{-3}
Specific		
coal mining (accidents)	14 hours	6×10^{-4}
police duty	1.5 days	2×10^{-4}
railroad employment	1.5 days	2×10^{-4}
fire fighting	11 hours	8×10^{-4}

One-In-A-Million Risks of Cancer

Source of risk	Type and amount of exposure: examples
Cosmic rays	One transcontinental round trip by air; living 1.5 months in Colorado compared to New York; camping at 15,000 feet over 6 days compared to sea level.
Other	20 days of sea level natural background radiation; 2.5 months in masonry rather than wood building; 1/7 of a chest x-ray using moderan equipment.
Eating & drinking	40 diet sodas (saccharin) 6 pounds of peanut butter (aflatoxin) 180 pints of milk (aflatoxin) 200 gallons of drinking water from Miami or New Orleans 90 pounds of broiled steak (cancer risk only)
Smoking	2 cigarettes

These probabilities were calculated using the one hit model which predicts the highest risks and assumes no threshold or, in other words, that even a single molecule might cause cancer.

This model has since been replaced by a multi-stage model in EPA which would show an even lower probable risk.

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Table 2.95--Cancer probabilities for visitors and residents in the vicinity of riparian/right-of-way projects sprayed with 2,4-D, picloram, or glyphosate.

	Probability from 2,4-D dose	Probability from picloram dose	Probability from glyphosate dose
Adult dermal dose	7.9×10^{-12}	4.4×10^{-14}	2.7×10^{-14}
Adolescent dermal dose	7.5×10^{-9}	4.2×10^{-11}	2.5×10^{-11}
Infant dermal dose	1.9×10^{-11}	1.1×10^{-13}	6.4×10^{-14}
Adult/adolescent oral dose (beef)	2.0×10^{-10}	2.2×10^{-11}	1.3×10^{-12}
Infant oral dose (beef)	2.3×10^{-10}	2.6×10^{-11}	1.5×10^{-12}
Adult/adolescent oral dose (veg)	4.8×10^{-9}	2.8×10^{-10}	1.7×10^{-11}
Infant oral dose (veg)	6.3×10^{-9}	3.5×10^{-10}	2.1×10^{-11}
Visitor re-entry or walk along ROW	3.5×10^{-10}	2.0×10^{-11}	1.2×10^{-12}
Adult oral dose (water)	1.1×10^{-9}	6.4×10^{-11}	3.9×10^{-12}
Adolescent oral dose (water)	1.5×10^{-9}	8.4×10^{-11}	5.1×10^{-12}
Infant oral dose (water)	1.6×10^{-9}	9.3×10^{-11}	5.6×10^{-12}
Adult/adolescent oral dose (fish)	2.0×10^{-11}	1.1×10^{-12}	6.4×10^{-14}
Infant oral dose (fish)	2.2×10^{-11}	1.2×10^{-12}	7.4×10^{-14}

1×10^{-9} = 1 person out of 2 billion people living near or visiting a treated area during or immediately following treatment.

1 s 10^{-12} = 1 person out of a trillion people living near or visiting a treated area during or immediately following treatment.

The highest probability shown on this table (6.3×10^{-9}) indicates that if 1 billion infants were in the area at the time of treatment, and they were eating vegetation that had been treated, about 6 of them would probably develop some form of cancer at some time during their lives that could possibly be related to the chemical treatment.

How Small Is Small? How Safe Is Safe?

Crop protection chemicals are poisons. How can even tiny amounts of crop protection chemicals be safe to drink?

That is an understandable concern. Common sense says we do not want poisonous substances in our water. An important concept to note is that everything is safe and everything is poisonous at some level or concentration. The tiny amounts of crop protection chemicals occasionally present in ground water would not have any effect on weeds or insects, let alone humans.

Years of laboratory toxicological studies are conducted for each potential product before it reaches the marketplace. These studies and others have proven that risks to health depend on both:

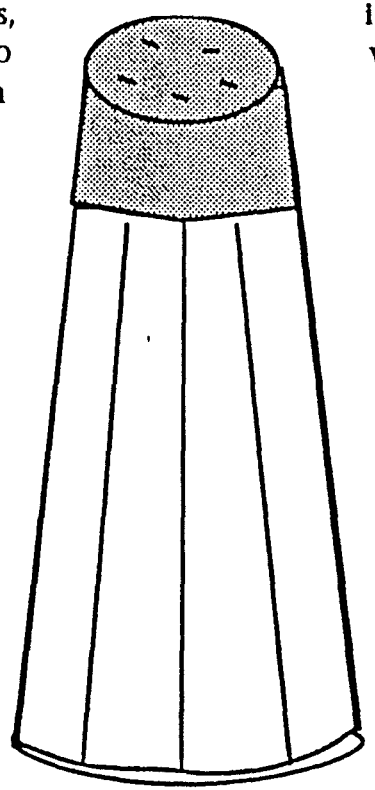
1) The toxicity of the material, and
2) The level of exposure.

Thus, the presence of a trace of the product in our water does not itself indicate a health risk.

Many substances at low levels are essential to our well-being but they can harm us or even kill us if we get too much of them. For instance...

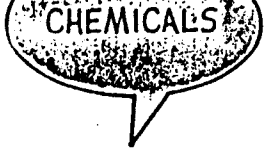
- Chlorine and fluorine are toxic chemicals in even modest quantities. Yet, added to our municipal water supplies in minute quantities, they protect us from harmful microorganisms and protect our teeth from cavities.
- Every dining room table has a salt shaker on it, yet few people stop to think that we can hold enough salt in our hands to kill us.
- Lack of vitamin A causes night blindness, hair loss, and skin disorders, yet, too much is toxic and can cause birth defects. Clearly, the dose makes the poison.

We accept some extreme risks everyday, without nearly the concern we give to crop protection chemicals. Hundreds of thousands of Americans die each year from various accidents and diseases, many of which are partially or completely preventable. However, there is no evidence that anyone has ever died as a result of crop protection residues in food or water.



In addition, there are risks from toxic chemicals which nature introduces into the environment. The regulatory process is wisely designed to protect us from these excesses of nature as well as the mistakes of man. In spite of the presence of these natural toxic chemicals and occasional residues of man-made chemicals in our water supply, our water is safe.

The concerns about our water supply are understandable. But we must keep in mind that anything taken to excess can be harmful and that almost every compound known to man can be safely ingested if the level is small enough. *Source: ACRE - Alliance for a Clean Rural Environment* ◆



Carcinogens Abound In Nature

Naturally-occurring carcinogens are virtually everywhere in nature — so should we worry about them and those minute quantities of synthetic chemicals found in our food? No, says this world-renowned cancer researcher.

By PARRY KLASSEN

CHEMICALS found to cause cancer in animal studies are labeled carcinogenic. Being the dreaded disease that it is, avoiding any chemical that could cause cancer might seem a very wise thing to do.

Yet as scientists improve their analytical tools used to make the carcinogenic designation, they have come up with a startling discovery: carcinogenic chemicals are virtually everywhere, not just in man-made compounds. The ability to detect these chemicals in parts per billion in food makes this fact even more startling.

Laboratory studies have shown that certain pesticides are designated as carcinogens. So if those chemicals are detected in fruits or vegetables at several parts per billion, does that mean that eating produce containing the chemical could cause cancer? The evidence says no, according to Dr. Bruce N. Ames, chairman of the department of biochemistry at the University of California, Berkeley.

Pesticides Pose Minor Risks

I think the risks associated with man-made pesticides in food are pretty minor," explains Ames, who helped developed the Ames Test, an internationally used technique for determining the mutagenicity of chemicals. "Overall, U.S. cancer death rates are staying at the same levels or decreasing, the major exception being lung cancer. There is no convincing evidence that there is a general increase in cancer related to the conditions of the modern industrial world."

Much of what the modern world is today can be attributed to a healthy, plentiful food supply. In fact, the Green Revolution, which began in the 1950s, is a result of better seed varieties, improved cultural practices — and use of pesticides.

"The FDA has estimated that the intake of carcinogens from man-made pesticide residues is extremely small relative to the background of natural substances." Ames contends that natural pesticides, some of which are carcinogenic in high-dose animal tests, are much more abundant in the food we eat than man-made pesticides.

Natural Pesticides Common

"Americans ingest in their diet at least 10,000 times more natural pesticides (by weight) than man-made pesticide residues. These natural 'toxic chemicals' have an enormous variety of chemical structures, appear to be present in all plants, and serve as protection against fungi, insects, and animal predators.

Ames adds that when plants are stressed or damaged, such as during a pest attack, they increase their natural pesticide levels many fold, occasionally to levels that are acutely toxic to humans.

However, there is little need to worry about eating food that contains small amounts of natural or man-made carcinogens, Ames believes. "The main rule in toxicology is 'Dose makes the poison.' At some level, every chemical becomes toxic, but there are safe levels below that. Most of the carcinogens we are worrying about may, in fact, be harmless at low levels."

Ames uses the example of apples treated with Alar, the growth regulator that caused so much controversy earlier this year. Several scientists, including Ames, developed the HERP (Human exposure, rodent potency ratio) index, a method of ranking the relative risks of carcinogenic chemicals. Drinking six ounces of apple juice containing UDMH, (breakdown chemical of Alar), each day for a lifetime is HERP = 0.0017%. This hazard is much less than that for consuming one mushroom per day for a lifetime (HERP = 0.1%) or for drinking one beer every day (HERP = 2.8%).

"The world is full of carcinogens and reproductive toxins, and it always has been. The important issue is the human exposure dose and, fortunately, this is almost always minuscule," Ames says.

Ames Profile

DR. Bruce N. Ames is one of the nation's most sought after and respected authorities on cancer research. He is chairman, Department of Biochemistry, University of California, Berkeley. Ames is a member of the National Academy of Sciences and is the recipient of the most prestigious award for cancer research, the General Motors Cancer Research Foundation Prize (1983), and the highest award in environmental achievement, the Tyler Prize (1985).

In the 1970s, Ames devised a simple test that screens for mutagenicity. The "Ames Test" is now the most widely used test for identifying probable carcinogenic (cancer-causing) substances. Ames does no consulting for the chemical, drug, or food industries, or for law firms.

Our Bodies Are Designed To Cope

Despite being virtually surrounded by naturally-occurring chemicals that could cause cancer at high doses, our bodies are equipped to cope. "We have a lot of defenses," Ames explains. "For example, our digestive system has a protective lining; as new cells are produced, the old ones, which have been exposed to mutagens, are sloughed off. Also, our liver defends us against foreign chemicals. Cells throughout our bodies have antioxidants and enzymes that protect us against oxidative damage. We have layers and layers of defenses that work against both natural and man-made chemicals."

Synergistic Effects Not Likely

Some argue that there may be a synergistic effect caused when people eat food treated with a number of different pesticides. Ames points out that if this were so, the synergistic effect of naturally-occurring pesticides would be much worse. "Synergistic pesticide residues in food and water pollution appear to be a trivial increment over the background level of natural carcinogens."

Ames feels much of the attention given to chasing minute quantities of chemical residues may very well be diverting attention from more important issues.

"Everyone knows that spending all of one's effort on trivia without focusing on important problems is counterproductive. If we divert too much of our attention to traces of pollution and away from public health concerns such as smoking, alcohol, unbalanced diets high in saturated fat and cholesterol, AIDS, radioactive radon in our homes, and high-dose occupational exposure, we do not improve public health and the important hazards are lost in the confusion.

"It is the inexorable progress of modern technology and scientific research that will continue to provide the knowledge resulting in steady progress to decrease cancer and birth defects and lengthen life span." FC

Nature Makes Potent Pesticides

SCIENTISTS have found that breeding plants to produce their own pesticides can at times produce natural compounds more toxic than synthetic chemicals.

Researchers at London University, in Canada, cross-bred a commercial potato variety with a native Peruvian plant and were able to elevate tuber levels of glycoalkaloids to 320 mg/kg. This cholinesterase inhibitor chemical occurs naturally in potatoes.

The potato industry has informal guidelines that new cultivars should not exceed 20 mg/100 g of pulp (200 ppm) total glycoalkaloids (TGA). This compares to typical tolerances for synthetic pesticides of 1 ppm.

After harvesting the test variety, researchers prepared the tubers as potato skins. Within 2 hours, all who ate the skins experienced nausea, vomiting, dizziness, and/or blurred vision, symptoms typical of cholinesterase inhibition.

A similar situation happened with a celery variety. Researchers cross-bred several varieties to produce a plant resistant to disease and insects. The variety had higher levels of psoralen, a naturally occurring chemical that has antibacterial and antifungal properties and is labeled a potent carcinogen by the National Toxicology Program.

Soon after the variety was introduced, farmers began to notice that workers developed a rash after harvesting the celery. It took several months before researchers discovered that the "celery-pickers disease" was caused by the insect-resistant celery.

Bad

The bad news is that many of our food plants contain toxins, some of which are carcinogenic. The good news is that Mother Nature intended it that way to help plants protect themselves against attack from fungi, insects and predators.

All plants produce their own natural toxins as a defense mechanism. That's good for the plant and insures the survivability of a source of food for both man and animals.

The path to good health is the same as always: eat a balanced diet from all food groups, including fresh fruits, vegetables and grains.

Environmentalists miss the point on pesticides

By BRUCE N. AMES

THE BAD news is that our plant foods contain carcinogens. Carrots, comfrey tea, celery, parsley, parsnips, mushrooms, cabbage, Brussels sprouts, mustard, basil, fennel, orange and grapefruit juices, pepper, cauliflower, broccoli, raspberry and pineapple contain natural pesticides that cause cancer in rats or mice and that are present at levels ranging from 70 ppb (parts per billion) to 4,000,000 ppb—levels that are enormously higher than the amounts of man-made pesticide residues in plant foods.

All plants produce their own natural pesticides to protect themselves against fungi, insects and predators such as man. Tens of thousands of these natural pesticides have been discovered, and every species of plant contains its own set of toxins, usually a few dozen. When plants are stressed or damaged, such as during a pest attack, they increase their natural pesticide levels many fold, occasionally to levels that are acutely toxic to humans.

Only a tiny percentage of these natural pesticides has been tested in animal cancer tests, but of those that have been tested, the percentage that turns out to be carcinogenic is about as high as for man-made pesticides (about 30 percent). The same appears to be true for natural teratogens (agents that cause birth defects). It is highly probable that almost every plant product in the supermarket contains natural carcinogens and teratogens.

The pesticides that we are eating are 99.99 percent all natural (we eat 10,000 times more natural than man-made pesticides). Most natural pesticides, like man-made pesticides, are relatively new to the modern diet, because most of our plant foods were brought to Europe within the last 500 years from the Americas, Africa and Asia (and vice versa).

In response to the environmentalist campaign about tiny traces of man-made pesticides, plant breeders are active in developing varieties that are naturally pest resistant. However, the primary way plant breeders are able to increase natural resistance to pests is to breed plants with increased levels of natural pesticides.

It should be no surprise, then, that a newly introduced variety of insect-resistant potato had to be withdrawn from the market, due to acute toxicity to humans caused by much higher levels of the teratogens solanine and chaconine than are normally present in potatoes. Similarly, a new variety of insect-resistant celery recently introduced in the United States had to be withdrawn after it caused widespread outbreaks of dermatitis due to a concentration of carcinogens at 9,000 ppb rather than the usual 900 ppb.

Many more such cases are likely to crop up—they are undetected as yet due to lack of immediate observable effects—because there is a fundamental trade-off between nature's pesticides and man-made pesticides.

The good news is that it now appears that the risk of cancer is negligible from carcinogens at levels far below the maximum tolerated dose given to rats and mice in cancer trials. I am not even very concerned about the cancer risk from allyl isothiocyanate, a natural carcinogen present in cabbage at 40,000 ppb and in brown mustard at 900,000 ppb, because I, along with most other leading scientists, am very skeptical about all of these worst-case, low-dose extrapolations from high-dose animal tests.

What must be emphasized is that "the dose makes the poison." For example, consuming five alcoholic drinks per day is clearly a risk factor in humans for cancer, and in pregnant women for giving birth to mentally retarded babies. However, there is no convincing evidence as yet that consuming one alcoholic drink per day is dangerous. As another example, sunlight can cause cancer, but the evidence suggests that the carcinogenic danger is from repeated sunburns. In fact, ultraviolet light at low doses induces a tan, which protects against the burning of skin by ultraviolet light.

My own estimate for the number of cases of cancer or birth defects caused by man-made pesticide residues in food or water pollution—usually at levels hundreds of thousands or millions of times below that given to rats or mice—is close to zero.

The Food and Drug Administration and the Environmental Protection Agency are doing an adequate job of protecting our food supply from carcinogenic contaminants and are much more credible than the activists lawyers with the Natural Resources Defense Council who spend their time wooing the media with scientifically unfounded claims about the dangers of pesticides, but who have never assembled a knowledgeable board of scientific advisers.

The cost to the American public from such misplaced efforts is enormous, both in terms of a very large hidden tax on our economy and in terms of lives lost by diverting our resources from real public-health problems.

In order to minimize cancer and the other degenerative diseases of aging (which are associated with our constantly increasing life expectancy), we need the knowledge that will come from further basic scientific research. Yet we are spending $70 billion per year on pollution because of wildly exaggerated fears and only $9 billion per year on all of our basic scientific research.

Bruce N. Ames is chairman of the department of biochemistry at the University of California, Berkeley.

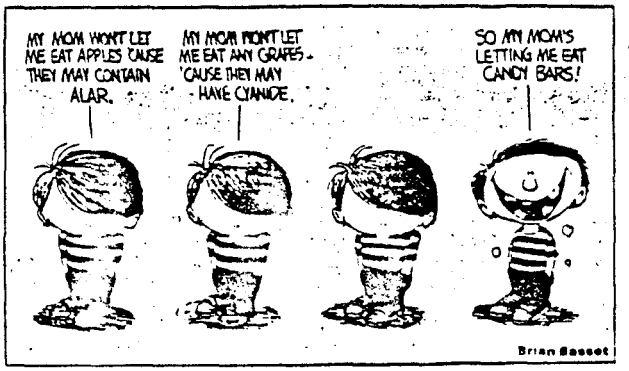


EXHIBIT 26
DATE 2-15-91
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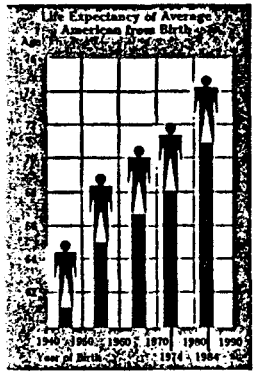
ıericans ive Longest ı History

child born in the United States in 1984 will live an average of years, reports the National Cen- for Health Statistics.
he facts and figures indicate that ıkind is healthier and living ger than ever before. However, ıe choose to scare the multitudes believing that nothing but doom



destruction lie ahead.
cientific and technological ad- ces have allowed Americans to ease their standard of living, as l as make it possible for them to y it longer.
ust how far has the American ulation come?
n the ten years from 1974 through 4, life expectancy increased 2.7 rs. That means an average of e months and one week were ned each year.
When comparing the mid-1940s to 4, people now are living TEN rs longer. So, when someone s, "life ain't what it used to be," 're right — it's more.
o spark your thoughts: Were the d ol' days really that great? ◆

demark of The Dow Chemical Company

Answering Questions About Pesticides And Food

Q. Is our food safe to eat? Who says so, and how do they know that?

A. These are questions that are increasingly being asked. Frequently, these concerns are expressed about pesticide residues on food. While the questions raised about residues are frightening, often the answer that comes back seems muddled and unclear.

What is the real story about food safety? What follows are some brief but straightforward answers to some common questions.

Q. Is our food safe to eat? How can we be sure?

A. The American food supply is probably the safest on earth and very likely the safest in human history. Extensive government programs have been instituted to ensure that safety. Independent reviews have been commissioned to ensure that those programs run effectively.

For example, only a year ago the National Academy of Sciences (NAS) issued the results of a two-year study on pesticides and food, which provided a lot of reasons for reassurance. After extensive research, the panel made recommendations to improve our nation's food safety programs. But it also notes that any cancer risk posed by pesticide residues was "small in comparison to other known causes of cancer."

Recent government statistics on cancer trends present yet another form of reassurance about the safety of our food. Our life span is steadily increasing. Rates for most types of cancers continue to decline (the sole exception being lung cancer which is attributed to smoking).

Taken together, the weight of the evidence provides more reason for reassurance than cause for concern.

Q. But aren't scientists finding pesticide residues on food?

A. In some cases, they are. But this isn't news. Our government recognized more than three decades ago that very low levels of pesticides could sometimes be found on food. As a result, the government set health-based safety standards for pesticide residues. These standards are called tolerances and are now being updated and administered by the Environmental Protection Agency and the Food and Drug Administration (FDA). Government tests of our food supply find these residues below acceptable levels.

As an example, recent tests by the California Department of Food and Agriculture (CDFA) found that 80 percent of the food tested had no detectable residues and 92 percent had less than 10 percent of the allowable amount. Less than two percent of the food had residues in excess of tolerances. Tests by the FDA have yielded similar results.

What about the two percent violation rate? Does it pose a hazard? The consensus of scientific opinion is that it does not. Safety factors have been built into the government's calculations to protect against this. In addition, these safe levels have been set, not based on one-time consumption of a single fruit or vegetable, but on consumption of produce over an entire lifetime. Obviously, all food should be in compliance. But an occasional piece of produce that's slightly above tolerances is unlikely to do much to change the overall picture and certainly does not represent an imminent hazard.

Q. But shouldn't we be concerned about ANY level of pesticides on food?

A. If by "concerned" you mean anxious or worried, the answer is no. It's not presence alone of a residue that determines food safety — it's the amount that causes harm. For example,

* The hydrogen sulfide in a boiled egg (the rotten egg odor) is as toxic as cyanide gas. Yet eating boiled eggs is not considered hazardous, because the levels of that compound in eggs is insignificant.

* Pesticide residues in food are dwarfed by the amount of natural pesticides a plant produces to protect itself. According to Dr. Bruce Ames, chairman of the University of California Department of Biochemistry, we eat 10,000 times more, by weight, of natural pesticides than of man-made pesticide residues. In some cases these natural pesticides amount to as much 10 percent of a plant's total body weight. Yet even these extreme levels are not toxicologically significant, Ames notes, because the body has natural defenses to protect itself against toxins.

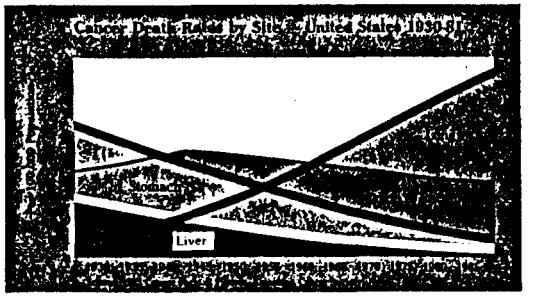
Keeping pesticide residues on food to a minimum is a worthy goal which concerns all of us. But the mere presence of a residue is not a cause for concern, since in science there is no such number as zero — only vanishingly small amounts found at lower and lower levels.

Q. But isn't it true that the U.S. government tests less than one percent of our food supply? How can such a low level of testing ensure safety?

A. Perhaps the best way to address this question is to look at the CDFA program, which has drastically increased the amount of food it tests over the past few years.

In 1986, CDFA found 98.09 percent of the food it sampled to be in compliance with health-based standards. In 1987, after almost doubling the number of samples it took, CDFA found 98.52 percent in compliance. By doubling the scope of its testing, CDFA was able to document that its food supply was about as safe, or even a little safer, than previously suggested.

Certainly, improvements could be made in our government testing programs. But merely increasing the amount of testing may only result in paying more money to get essentially the same answers.



Q. But isn't it true that government testing only detects about half the pesticides used in this country?

A. No. For the sake of economy, government programs use tests that can detect many chemicals in a single analysis. But some chemicals are harder to detect than others and need compound-specific tests. Local offices of government food inspection programs inspect for these more difficult-to-detect compounds on a case-by-case basis.

Whether or not to run a specific test for a given compound is based on the local staff's knowledge of the use of that compound in their area. If local crops, infestations, and historical practices suggest a particular residue may be a concern, compound-specific analysis will be run. This is intended as a reasonable approach, since it would hardly be cost-effective to test for every possible product, including all those that aren't even approved or compatible with a given crop.

Q. You mentioned the NAS report. Didn't that report say that pesticide residues on food were going to cause an additional 1.4 million cancers in the U.S. within our lifetimes?

A. No, the NAS report did not say that. That figure is a misuse of data contained in the report and has been disclaimed by the NAS as being "meaningless." The figure was calculated from the report's data by an advocacy group seeking to advance its own ends and which represented the figure as conclusions of the report instead of their own. Regrettably, this misuse of data went unquestioned by some reporters, and in a few cases, it received more coverage than did the actual conclusions of the NAS.

How government programs work to ensure food safety is a mystery to most people, so the concerns being expressed are probably no surprise. But there are good answers to the tough questions now being asked. Despite the present furor, the weight of the evidence shows that our food supply is the safest in the world. ◆

Perception of Pesticide Risk Incorrect

There's no higher priority in the industry right now than trying to find better ways to acquaint people with pesticide benefits. One reason that job is difficult is because perceptions of the risk posed by pesticides is disproportionate to the actual risk.

Surprisingly, college students are farthest from the mark when asked to rate pesticide risk. They rank pesticide accident risk above that posed by hunting, bicycling, and riding motorcycles.

In 1982, 800 people died while hunting, 1,000 were killed on bikes, and 3,000 were killed on motorcycles. Thirty deaths involved pesticides.

What about poisoning?

In 1983, medicinal substances killed 2,866 people. Carbon monoxide and other gases or vapors killed 1,189. Pesticide poisoning resulted in 22 accidental deaths. ◆

Perspective

Frequently, the public issues we deal with are actually matters of perspective. In these cases, close attention paid to a small problem can blow it out of proportion, so that people become very concerned.

Consider, for example, this ugly fellow, a common invader of homes. He can drink three times his body weight in human blood in a single meal. He can leap 150 times his own height — the equivalent of a human leaping over the Empire State Building — and can make 30,000 of these leaps in a row without stopping. In nine months, under optimal circumstances, a female of the species could create two trillion descendants. This ugly fellow and his kind also carry a number of diseases, and a relative of his helped spread plague that once wiped out about a third of Eurasia's people.

What's wrong with this picture?

This creature is, of course, the common cat flea. If it were really greater than human size, it would be a legitimate object of terror and might well extinguish all warm-blooded life on the face of the earth. But this picture is out of perspective: even a good-sized flea is only about a sixteenth of an inch long. While fleas are a persistent pest and need to be controlled, it's only through false perspective that one tiny insect gets blown up to frightening proportions.

A good example of loss of perspective on public issues is the recent apple scare that occurred last March. In that instance, a report by an advocacy group using worst case assessments rejected by our federal regulators so terrified the public that mothers began dumping apple juice down the drain and schools around the nation temporarily banned apples from school lunch programs.

At the peak of the uproar, scientists estimated that a 40-pound child would have to eat 1,000 apples a day for the rest of his life to approach the dose of daminozide that produced tumors in laboratory animals. But that message didn't get through to the public. In fact, in one

Scientists say it would take a 40 pound child 1,000 apples a day, each day, for a lifetime to achieve the dose of daminozide that caused harm in laboratory animals.

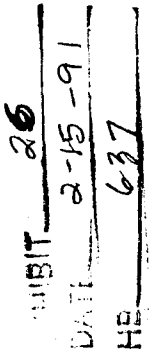
case, a concerned teacher called the International Apple Institute asking whether she could simply set a case of apple juice she was now afraid to use out in the trash — or whether she had to take it to a hazardous waste landfill, presumably to have it incinerated.

"Killer apples" and fleas the size of houses are the sorts of concerns that arise when perspective gets confused. But whose responsibility is it — when lives are disrupted, jobs are lost and the public is needlessly frightened, all because of distorted perspective?

Rank the Risk

What activities or products do you think carry the greatest risks? The following list of 30 hazards were ranked by Decision Research (as reported by Scientific American) in terms of perceived risks according to several different groups and actual risks based on scientific data. Rank them from most to least risky and then turn the page to see how your perceptions compare to the scientific facts.

_____ Alcoholic beverages
_____ Bicycles
_____ Commercial aviation
_____ Contraceptives
_____ Electric power
_____ Fire fighting
_____ Food coloring
_____ Food preservatives
_____ General aviation
_____ Handguns
_____ Home appliances
_____ Hunting
_____ Large construction
_____ Motorcycles
_____ Motor vehicles
_____ Mountain climbing
_____ Nuclear power
_____ Pesticides
_____ Police work
_____ Power mowers
_____ Prescription antibiotics
_____ Railroads
_____ Scholastic football
_____ Skiing
_____ Smoking
_____ Spray cans
_____ Surgery
_____ Swimming
_____ Vaccinations
_____ X-rays



Test Your Food & Farm IQ

Test your knowledge of food and farm production. Answer as many questions as you can, then check your decisions with the answer box.

1. There are 4.5 billion people on Earth today. What is the population expected to be by the year 2000? _____
   (a) 3 billion (b) 5 billion
   (c) 6.2 billion (d) 8 billion
2. U.S. farms are the most productive in the world. One farm family now grows enough to feed _____ people.
   (a) 4 (b) 16 (c) 27 (d) 62 (e) 80
3. In India where 65 percent of the people are farmers, ⅔ of the income goes for food. In Russia, 39 percent are farmers and more than half the income goes for food. In the United States, less than 15 percent of our income goes for food. What percent of the U.S. population are farmers? _____
   (a) 2 (b) 8 (c) 20 (d) 25 (e) 33
4. U.S. farms are fewer in number but larger in size. They've been mechanized and many now concentrate on a few crops. Compared with 1910, what are the total crop acres being farmed today? _____
   (a) 5% less (b) 20% more
   (c) 30% more (d) 50% more
   (e) same
5. Which state is the leading agricultural producer in the United States? _____
   (a) Illinois (b) Iowa (c) Texas
   (d) California (e) Florida
6. Farm chemicals protect crops from insects, weeds and diseases. Without this protection, food prices would soar. Can you guess what percent? _____
   (a) 2% (b) 10% (c) 20% (d) 40-75%
7. On occasion, epic disasters have devastated key crops. Which farm or forest pest crisis proved the most costly? _____
   (a) California's Medfly invasion, 1980-81
   (b) Ireland's potato blight, 1840s
   (c) Midwest's corn blight, 1970
   (d) Northeast's gypsy moth infestation, 1970s and 1980s
   (e) Southeast's fire ant infestation, 1970s and 1980s
8. There are three major groups of crop protection chemicals used by farmers to guard against insects, plant disease and weeds. Which group is the most widely used? _____
   (a) Insecticides (b) Fungicides (c) Herbicides
9. The quality, quantity and variety of foods we enjoy today contribute to longevity. Since 1900, the average life span in the United States has increased from 47.3 years to _____ years.
   (a) 52 years (b) 59.8 years
   (c) 64 years (d) 74.7 years
10. To develop a new crop protection chemical, researchers need between 7 and 10 years and must invest some $ _____
    (a) $100,000 (b) $2 million
    (c) $20 million (d) $35 million

ANSWER BOX

1. (c) World population in the year 2000 is expected to be 6.2 billion. **2. (e)** One U.S. farm family today feeds 80 people. Only 15 years ago, the number was 47. **3. (a)** Today, only about 2 percent of our population are farmers. **4. (e)** Today's farmers grow crops on the same acreage as in 1910, but they feed millions more because of increased productivity from every acre. **5. (d)** California, with more than $14 billion in annual farm income. It produces almost half of the nation's fruits and vegetables. Iowa ranks second.
6. (d) Without crop protection, food prices would jump 40 to 75 percent, according to university studies. Shortages, lower quality would be common. **7. (b)** Each pest crisis triggered disaster. But in the 1840s, Ireland's potato blight brought crop failures and starvation to about a million people. Another 2 million emigrated to the United States.
8. (c) Herbicides — compounds used to control weeds — are the most widely used crop chemicals. Herbicides eliminate weeds that compete for moisture and nutrients, so food crops benefit. **9. (d)** The average life span of a child born in the United States in 1984 is 74.7 years reports the National Center for Health Statistics. **10. (d)** This $35 million invested to discover and develop a crop chemical does not include cost of a manufacturing plant. Majority of the costs are for tests to assure that the new compound is safe for the environment.

Source: USDA

Think of It This Way

Because of advances in analytical equipment and measurement techniques, trace elements of synthesized and natural chemicals can be detected in parts per billion or even parts per trillion. The following comparisons may put these numbers in better perspective.

Think of **one part per million** as:

- 1 inch in 16 miles,
- 1 minute in 2 years,
- 1 cent in $10,000,
- 1 ounce of salt in 31 tons of potato chips, or
- 1 bad apple in 2,000 barrels.

●

One part per billion compares with:

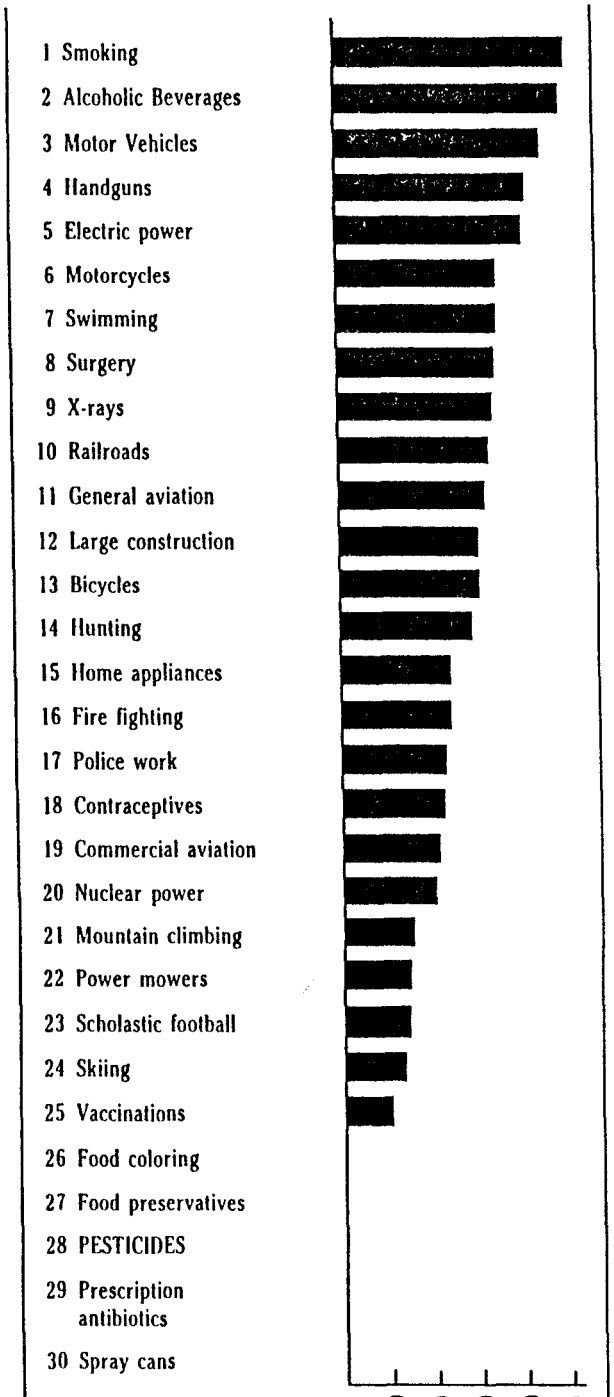
- 1 inch in 16,000 miles,
- 1 second in 32 years,
- 1 cent in $10 million,
- 1 pinch of salt in 10 tons of potato chips,
- 1 lob in 1,200,000 tennis matches, or
- 1 bad apple in 2 million barrels.

●

One part per trillion compares with:

- 1 postage stamp in an area the size of Dallas,
- 1 inch in 16 million miles (more than 600 times around the earth),
- 1 second in 320 centuries,
- 1 flea on 360 million elephants,
- 1 grain of sugar in an Olympic-sized pool, or
- 1 bad apple in 2 billion barrels.

The Actual Risk



Technical credit: "The Biological Effects of Low-Level Ionizing Radiation," by Arthur C. Upton, Scientific American, February 1982.

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Did You Know

What activities or products do you think carry the greatest risks? How much do you know about food production in the U.S.? Following are some quick tests you can take to test your knowledge in these areas. You may surprise yourself with how much you really do know.

EXHIBIT 26
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Taken From
NATURAL CARCINOGENS IN FOOD
A SURVEY
By the American Council on Science and health

1) **NITROSOMINES AND THEIR PRECURSORS**
The following foods contain high amounts of nitrates:
Beets, Celery, Lettuce, Spinach, Radishes, Rhubarb, Mustard, Kale, Turnips, and Cabbage. (Nitrates can be converted by bacteria present in saliva and in the intestine into nitrites. Nitrites can react with normal body chemicals to produce nitrosamines. Of 300 nitrosamines tested 90% are carcinogenic, many highly so.
Nitrite is also used to cure fish, poultry and meat.

2) **CARCINOGENS PRODUCED BY COOKING (BENZO(a)PYRENE) (POLYCYCLIC AROMATIC CARBONS) BREAKDOWN PRODUCTS OF (TRYPTOPHAN, GLUTAMIC ACID, PHENYLALANINE, AND LYSINE).**
The following foods contain these types of products:
Meat, Fish, Bread Crusts, Toast, Fried Potatoes, and Coffee.

3) **AFLATOXINS AND OTHER MOLD TOXINS** are found in:
Peanuts, corn, and other grains, and therefore also to milk, peanutbutter, cereals, coconuts and even other foods. Aflatoxins include some of the most potent carcinogens known to man.

4) **HYDRAZINES** are found in edible mushrooms.

5) **ALLYL ISOTHIOCYANATE**
Mustard, Horseradish, Broccoli, Cabbage, and Rocket.

6) **PYRROLIZIDINE ALLKALOIDS** are present in thousands of plants but most common human exposure is from herbs and herb teas.

7) **SUBSTANCES IN BRACKEN FERN** edible fiddlehead greens etc..

8) **SAFROLE, ESTRAGOLE, BETA-ASARONE AND ISOSAFROLE** found in:
Many spices herbs and vegetables i.e. Sassafras, nutmeg, mace, anise, cinnamon, black pepper, tarragon, basil, fennel, bitters, vermouth, cloves, allspice, artichokes, carrots, parsnips, bananas, parsley, and avocados.

9) **TANNINS** found in:
Tea, Red Wine, Coffee, Brachen Fern, Sorghum.

10) **PSORALENS** found in:
Celery and parsnips.

11) **ETHYL CARBAMATE** found in:
Bread, Yogurt, Soy Sauce, Beer, Wine.

12) **ESTROGENIC SUBSTANCES** found in:
Hops, Soy Beans, Alfalfa, Feed Grains, and Corn.

13) **COUMARIN** found in:
Casia, Ovage, Lavender, and Woodruff which are used in candies, liqueurs, and some wines

14) **ALCOHOL**

15) **COFFEE** has several mutagenic and/or carcinogenic substances.

16) **DIACETYL** found in:
Butter and Coffee.

17) **QUERCETIN, KAEMPFEROL, RUTIN, AND OTHER FLAVONOIDS** found in:
Fruits, Juices, Vegetables, Buckwheat, Tea, Cocoa, Red Wine, Dill, Soy Beans, and Brachen Fern.

18) **OTHER TOXINS**
In addition to carcinogenis and mutagenic compounds, many common foods contain products that are toxic in other ways.

Legumes, Seed Fruits, Stone fruits, Corn, Yams, Nuts, Potatoes, and others.

M.A.T.A.

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EXHIBIT 27
DATE 2-15-91
HB 637

TESTIMONY
in opposition to
House Bill #637
"...Notification of Pesticide applications
within the boundaries of incorporated
cities and towns"

Mr. Chairman, members of the committee, thank you for the opportunity to appear before you. For the record, my name is John Semple. I represent the aerial application (old name, cropduster) industry of Montana. I am also an aerial applicator, having been in business for 15 years. I also represent AMTOP, an organization of Montana tree and lawn care specialists. You heard previously from AMTOP's president, John Bass.

We are opposed to H.B. 637, as written, for the following reasons:

1. Line 8 thru 17, page one, these lines make mention of...may be hazardous to human health,...and...persons...should be informed...thereby given the opportunity to avoid unnecessary exposure to pesticides.

The United States EPA already determines, through testing that costs millions of dollars and years of research, the effects of exposure to pesticides. Attached to this testimony are several reports on the subject. The Montana Department is proposing in its 92-93 biennium budgets the establishment of a pesticide training program for pesticde retailers and people living in urban areas. A contract between the Department and Montana State University Cooperative Extension Service (CES) will be entered into for development and implementation of a pesticide training program for pesticide retailers selling home, yard and garden use pesticides and for people in urban areas. Once CES has developed the training materials, approximately 1/3 of the county agents per year would receive funds to manage the training in the county. Multiple county training programs cooperatively managed by county agents could also be conducted. The training would include: basic pesticide knowledge, safety, pest identification, alternative controls and related subjects. The funding amounts to $21,115 FY 92 and $22,000 FY 93. If the program is successful and meaningful it would be funded in future years.

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We have asked Gary Gingery, Environmental Management Division of the Department of Ag, if they would be a clearing house for a registry of people sensitive to pesticides and they will. To belong on the registry a toxicologist, allergist, or a doctor of occupational medicine must certify as to the sensitivity. As a side note, according to the Professional Lawn Care Association of America (PLCAA), Maryland and Pennsylvania, two densly populated states, have accumulated in a two year period, less than 120 certified pesticide sensitive people on their registry. Montana may have less, using the fact we have less people. We have also suggested that the Department of Ag do a study to determine the number of people sensitive to pesticides used in Montana in their respective geographical locations. This information could then be used to determine if we really need legislation such as H.B. 637.

2. Line one, page 2, a prenotification time of 48 hrs is unworkable. Weather, as fast as it changes in this state, precludes us from adhering to the requirement. Driving around town or making countless phone calls, changing signs on 20 to 100 or more lawns each day during the applicators busy season does not allow for the timely application (weather permitting) of pesticides as part of an Integrated Pest Management Plan (I.P.M.P.). Also, when some insects, such as aphids, are found on plants there is a good possibility that an immediate application is required or devastation of some plants would occur.

3. Line 1 thru Line 22, page 2, does not address who is liable or who is in violation if an unknown person(s) deface, remove, or replace a sign within the notification period.

4. Line 19, Page 2... 80 square inch...of sixteen states that have posting requirements, all but one have signs that are 4" X 5" excepting some golf course signing which is bigger. See attached paper of states requirements.

5. Area type applications such as mosquito control or noxious weed control have not been addressed. Budgetary restraints would preclude these districts from hiring people to post all the areas to be sprayed on an individual landowner notification basis.

Instead of this legislation, we recommend the Department of Ag study of pesticide sensitivity, a registry with specific constraints and the Department of Ag retailer and homeowner training. Then, if there are still problems they can be identified with the help and knowledge of all concerned.

Thank you for your consideration.

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DATE 2-15-91
HB 637

nitro-green®, inc.
PROFESSIONAL LAWN & TREE CARE

TESTIMONY IN OPPOSITION TO HOUSE BILL 637
February 15, 1991

Mr. Chairman, Members of the committee:

For the record my name is Brad Culver, President of Nitro-Green, Inc., a lawn care service based in Helena. Thank you for the opportunity to express my views on House Bill 637. I am opposed to it for the following reasons:

-Our company currently prenotifies any customer who requests it for any reason (ie. pets out, chemical sensitivity, etc.).

-We promote judicious use of pesticides - many of our applications include only spot treatment of pests as opposed to blanket applications of pesticides and many do not contain pesticides at all.

-Labels of products our company uses require people and pets to stay off until dry - usually 20 minutes to 1 hour - not 72 hours.

-Pesticide labels on Environmental Protection Agency approved products do not require 48 hours or any pre-notification.

-All of our sales and treatment literature contain specific instructions on safety after an application (ie. "stay off until dry").

-We furnish labels, material safety data sheets, and other information on products upon request.

-Lawn care products applied according to label directions have not caused health problems.*

-HB637 would increase our cost of doing business approximately $18,000.00-$24,000.00 per year thus making the cost of our services out of reach for many elderly or fixed income people. These people may then try applying pesticides

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themselves to save money without adequate training and storage facilities.

-Weather cannot be predicted 48 hours in advance.

-Integrated Pest Management (IPM) would be less effective if notification is required - timing is crucial.

-Certain pests require immediate attention (ie. grasshoppers, pearslugs, aphids, etc.).

-HB637 does not address vandalism or the removal of the posted signs by individuals other than the user. If such action occurred are we held liable or in violation?

-Money spent on trying to enforce this type of legislation could be better spent on pesticide education and training.

In conclusion, medical science has not documented a case of anyone being injured from the proper application of turf and ornamental care products. Individuals, who, in the past have not selected the proper product for the target pest, who have not properly calibrated their equipment or who have not used proper application methods will probably choose to ignore these proposed laws also. This bill provides public awareness of the use of pesticides but does nothing to promote their safe use. I would whole heartedly support any legislation that would result in safer use of pesticides.

Sincerely,

Brad Culver

Brad Culver

*From Professional Lawn Care Association of America's publication, PROSOURCE, Douglas K. Moody, editor.

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CHEMLAWN®

EXHIBIT 9
DATE 2-15-91 P.2/3
HB 637

February 15, 1991

Robert Raney, Chairman
Natural Resources Committee
Helena, MT

Re: Montana - House Bill 637

Dear Mr. Raney:

I am submitting comments on behalf of ChemLawn Services Corporation (ChemLawn). ChemLawn is a nationwide landscape care company conducting business in 45 states and Canada. ChemLawn does not maintain a corporate owned branch in Montana; however, the company does maintain one franchise, Roberts, Inc. I would like to take this opportunity to respond to the notification requirements presented in House Bill 637 and to propose alternative requirements.

ChemLawn voluntarily began the practice of "posting" after an application in 1986, long before it was required by any state. It is ChemLawn's experience that a 4-inch by 5-inch sign is fully adequate to meet the objective of alerting the public of an application. This size is currently in use in fifteen (15) other states that have posting requirements and has proven to be quite effective. In addition, research by ChemLawn over the past five (5) years indicates a very high degree of customer satisfaction regarding the size (4 inches by 5 inches) of the sign. A sign the size proposed in the bill (a minimum of 80 inches square) creates visual pollution and in a time when we are trying to conserve, it wastes natural resources since a larger sign requires more material for the sign itself as well as the post to support the weight of the sign. This poses a threat to the safety of the public, as well as to our children who are known to remove lawn markers to play with. A large sign, with a large supporting post, also adds more to the solid waste stream.

I would like to propose that Montana initiate use of the standard 4-inch by 5-inch sign and specify that the signs be made of rain-resistant, rigid material. This would eliminate the use of flag-type signs and ensure that the information is more immediately visible.

Since not all applications contain a pesticide, it is ChemLawn's position that it would be misleading for the wording on the sign to state "pesticide application." Instead, I would suggest the use of the phrase *Lawn Care Application Please Stay Off Grass Until Dry.* The lettering should be in at least 18-point type. I also recommend, in not less than 7-point type, the wording: *Customer - Please Remove Sign After 24 Hours.* The 24 hour time frame meets all label re-entry requirements and places the responsibility of removing the sign on the homeowner and negates any additional expense to the company for a return visit for sign removal.

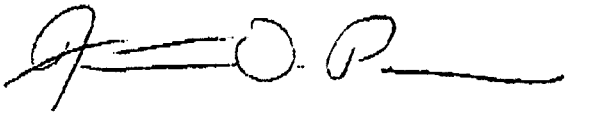
I suggest that the sign information proposed in the bill i.e., chemicals applied, etc., should be made available to the customer at the time of application. It is ChemLawn's position that the customer has the right to know what is being applied to his/her property and therefore should be supplied this information. The available information should be expanded to include the general reason for use of the pesticide, the concentrations and any special instructions applicable to the end-use product.

The second issue I would like to address is the issue of voluntary advance notice of an application. ChemLawn, as well as most commercial applicators, currently provide advance notice to abutting property owners that an application will be made to a customer's property. This service is provided upon request and has proven effective. Posting a sign 48 hours prior to an application places unnecessary operating expense on the lawn care company and does not guarantee advance notice since signs can be removed or accidentlally hidden behind other household products such as trash cans, leaves, etc.

I appreciate the opportunity to comment on this bill and would encourage you to contact me if you have any questions or would like additional information.

Very truly yours,

CHEMLAWN SERVICES CORPORATION



Forrester Davis Potter
Manager, Legislative Affairs

jhm

DATE 2-15-91
HB 607

TESTIMONY ON
H.B. 607

BEFORE THE NATURAL RESOURCES COMMITTEE OF THE MONTANA HOUSE OF REPRESENTATIVES

BY CHARLES HOMER,
ENVIRONMENTAL SPECIALIST
AIR QUALITY BUREAU
MONTANA DEPARTMENT OF HEALTH
AND ENVIRONMENTAL SCIENCES

A BILL FOR AN ACT ENTITLED: "AN ACT AMENDING THE LAWS RELATING TO PERMIT REQUIREMENTS FOR SOLID WASTE INCINERATORS; EXTENDING THE PERMIT REQUIREMENTS TO HAZARDOUS WASTE INCINERATORS, AMENDING SECTION 75-2-215, MCA; AND PROVIDING AN IMMEDIATE EFFECTIVE DATE."

The Department of Health and Environmental Sciences has requested the submittal of this bill to respond to a growing trend of incineration of solid and hazardous waste.

The main purpose of this bill is to clarify the implementation of Section 75-2-215, MCA, the section that details the permitting requirements for solid waste incinerators.

In addition, this bill extends the additional permitting requirements currently applicable to solid waste incinerators to hazardous waste incinerators. Since solid and hazardous wastes are defined separately, the stricter permitting requirements are not currently required for hazardous waste incinerators. Due to the increased interest in hazardous waste incineration in Montana, and to the potential for toxic air emissions from hazardous waste incinerators, the department believes that stricter permitting requirements should also be applicable to hazardous waste incinerators.

The bill also makes several small changes to the existing law to bring it in line with air quality permitting authority found in the Montana Clean Air Act and to clearly define the intent of the legislature.

The first change clarifies that construction or modification of an incinerator cannot occur until an air quality permit has been obtained. The current law requires a permit for an incinerator be obtained prior to operation. All other state and federal air quality permitting rules require a permit prior to construction or modification of a source.

The term "commercial" is removed from the incinerator definition since it was undefined and therefore very difficult to implement. This requirement was replaced by a size cutoff of 200 pounds per hour of incineration capacity for new incinerators required to obtain a permit. This would still require an air quality permit for virtually all municipal waste incinerators, hazardous waste incinerators, and large medical waste incinerators while exempting most small grocery store incinerators and some small quantity medical waste incinerators. The department believes that these small incinerators have a minimal impact on air quality and should not be pulled into permitting requirements.

This bill also clarifies that additional permitting requirements apply to existing non-permitted (i.e., grandfathered) incinerators that change the type or amount of waste they currently incinerate. The current law applies only to existing <u>permitted</u> incinerators. This change would make incinerator permitting consistent with other state and federal permitting rules that apply to sources which change the type or amount of their emissions. The bill would also remove the portion requiring that a "negligible risk" to public health,

PROPOSED AMENDMENT

EXHIBIT 31
DATE 2-15-91
HB 607

Section 1. Subsection 2 should be amended as follows:

Add new paragraph (c)

(c) The owner and operator has submitted, as part of the permit application, a health risk assessment demonstrating to the department's satisfaction that any proposed incinerator would not cause an increase in cancer burden of more than one in one million. For the purposes of this chapter, cancer burden shall be defined as the estimated number of theoretical cancer cases in a defined population resulting from lifetime exposure through direct inhalation of pollutants emitted from a facility.

GREY BILL

DATE 2-15-91
HB 380

52nd Legislature LC 0209/01

IMMEDIATE ACTION TO CONTAIN, REMOVE, AND ABATE A RELEASE OF A HAZARDOUS OR DELETERIOUS SUBSTANCE AT CERTAIN SITES

HOUSE BILL NO. 380

INTRODUCED BY [handwritten signatures]

A BILL FOR AN ACT ENTITLED: "AN ACT TO REQUIRE ~~REMEDIAL ACTION AND CLEANUP OF KNOWN INDUSTRIAL WASTES AND HAZARDOUS SUBSTANCES~~ TO PREVENT AQUIFER CONTAMINATION; TO INCREASE CERTAIN CIVIL PENALTIES TO $25,000 PER DAY OF VIOLATION; AND AMENDING SECTIONS 75-5-103, 75-5-601, 75-5-605, 75-5-631, 75-10-701, 75-10-704, 75-10-711, 75-10-712, 75-10-714, AND 75-10-715, MCA."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MONTANA:

Section 1. Section 75-5-103, MCA, is amended to read:

"75-5-103. Definitions. Unless the context requires otherwise, in this chapter the following definitions apply:

(1) "Sewage" means water-carried waste products from residences, public buildings, institutions, or other buildings, including discharge from human beings or animals, together with ground water infiltration and surface water present.

(2) "Industrial waste" means any waste substance from the process of business or industry or from the development of any natural resource, together with any sewage that may be present.

(3) "Other wastes" means garbage, municipal refuse,

Montana Legislative Council

GREY BILL

LC 0209/01

decayed wood, sawdust, shavings, bark, lime, sand, ashes, offal, night soil, oil, grease, tar, heat, chemicals, dead animals, sediment, wrecked or discarded equipment, radioactive materials, solid waste, and all other substances that may pollute state waters.

(4) "Contamination" means impairment of the quality of state waters by sewage, industrial wastes, or other wastes, creating a hazard to human health.

(5) "Pollution" means contamination or other alteration of the physical, chemical, or biological properties of any state waters which exceeds that permitted by Montana water quality standards, including but not limited to standards relating to change in temperature, taste, color, turbidity, or odor; or the discharge, seepage, drainage, infiltration, or flow of any liquid, gaseous, solid, radioactive, or other substance into any state water which will or is likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife. A discharge, seepage, drainage, infiltration or flow which is authorized under the pollution discharge permit rules of the board is not pollution under this chapter.

(6) "Sewage system" means a device for collecting or conducting sewage, industrial wastes, or other wastes to an ultimate disposal point.

INTRODUCED BILL
HB 380

(7) "Treatment works" means works installed for treating or holding sewage, industrial wastes, or other wastes.

(8) "Disposal system" means a system for disposing of sewage, industrial, or other wastes and includes sewage systems and treatment works.

(9) "State waters" means any body of water, irrigation system, or drainage system, either surface or underground; however, this subsection does not apply to irrigation waters where the waters are used up within the irrigation system and the waters are not returned to any other state waters.

(10) "Person" means the state, a political subdivision of the state, institution, firm, corporation, partnership, individual, or other entity and includes persons resident in Canada.

(11) "Council" means the water pollution control advisory council provided for in 2-15-2107.

(12) "Board" means the board of health and environmental sciences provided for in 2-15-2104.

(13) "Department" means the department of health and environmental sciences provided for in Title 2, chapter 15, part 21.

(14) "Local department of health" means the staff, including health officers, employed by a county, city, city-county, or district board of health.

(15) "Point source" means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or vessel or other floating craft, from which pollutants are or may be discharged.

(16) "Owner or operator" means any person who owns, leases, operates, controls, or supervises a point source.

(17) "Standard of performance" means a standard adopted by the board for the control of the discharge of pollutants which reflects the greatest degree of effluent reduction achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants.

(18) "Effluent standard" means any restriction or prohibition on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged into state waters.

this is stated in ↙

(19) "Aquifer" ~~means a water bearing, subsurface formation capable of yielding sufficient quantities of water to a well for a beneficial use.~~" out

Section 2. Section 75-5-601, MCA, is amended to read:

"75-5-601. ~~Clean-up~~ Cleanup orders. (1) The department shall issue orders to any a person to clean up any material

establish and implement a system for prioritizing sites for remedial action based on potential effects on human health and the environment

EXHIBIT 38
2-15-91
SB 380

which that he or his employee, agent, or subcontractor has accidentally or purposely dumped, spilled, or otherwise deposited in or near state waters and which that may pollute them.

(2) The department shall ~~give priority attention to issuance of cleanup orders in situations in which industrial waste is known to be present and is likely to cause contamination of an aquifer if action is not taken~~."

Section 3. Section 75-5-605, MCA, is amended to read:

"75-5-605. Prohibited activity. (1) It is unlawful to:

(a) cause pollution as defined in 75-5-103 of any state waters or to place or cause to be placed any wastes in a location where they are likely to cause pollution of any state waters;

(b) allow contaminants or hazardous substances, as defined in 75-10-602, that are present at a site ~~regulated under~~ as defined by the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Public Law 96-510 national priority list ~~to cause pollution of an aquifer~~;

~~(b)~~(c) violate any provision set forth in a permit or stipulation, including but not limited to limitations and conditions contained therein;

~~(c)~~(d) violate any order issued pursuant to this chapter; or

~~(d)~~(e) violate any provision of this chapter.

to cause pollution of an aquifer: (i)

(ii) where mining has left an abandoned open pit as described in 82-4-336(5)

(2) It is unlawful to carry on any of the following activities without a current permit from the department:

(a) construct, modify, or operate a disposal system which discharges into any state waters;

(b) construct or use any outlet for the discharge of sewage, industrial wastes, or other wastes into any state waters; or

(c) discharge sewage, industrial wastes, or other wastes into any state waters."

Section 4. Section 75-5-631, MCA, is amended to read:

"75-5-631. Civil penalties -- injunctions not barred. (1) A person who violates this chapter or a rule, permit, effluent standard, or order issued under the provisions of this chapter ~~shall be~~ is subject to a civil penalty not to exceed $10,000, except that a person who violates the provisions of 75-5-605(1)(b) is subject to a civil penalty not to exceed $25,000. Each day of violation constitutes a separate violation.

(2) Action under this section does not bar enforcement of this chapter or of rules or orders issued under it by injunction or other appropriate remedy.

(3) The department shall institute and maintain any enforcement proceedings in the name of the state."

Section 5. Section 75-10-701, MCA, is amended to read:

"75-10-701. Definitions. As used in this part, unless

the context requires otherwise, the following definitions apply:

(1) "Aquifer" means a water-bearing, subsurface formation capable of yielding sufficient quantities of water to a well for a beneficial use.

~~(1)~~(2) "Department" means the department of health and environmental sciences provided for in Title 2, chapter 15, part 21.

~~(2)~~(3) "Director" means the director of the department of health and environmental sciences.

~~(3)~~(4) "Environment" means any surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the state of Montana or under the jurisdiction of the state of Montana.

~~(4)~~(5) (a) "Facility" means:

(i) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft; or

(ii) any site or area where a hazardous or deleterious substance has been deposited, stored, disposed of, placed, or otherwise come to be located.

(b) The term does not include any consumer product in consumer use.

~~(5)~~(6) "Fund" means the environmental quality protection fund established in 75-10-704.

~~(6)~~(7) "Hazardous or deleterious substance" means a substance that because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose an imminent and substantial threat to public health, safety, or welfare or the environment and is:

(a) a substance that is defined as a hazardous substance by section 101(14) of the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601(14), as amended;

(b) a substance identified by the administrator of the United States environmental protection agency as a hazardous substance pursuant to section 102 of CERCLA, 42 U.S.C. 9602, as amended;

(c) a substance that is defined as a hazardous waste pursuant to section 1004(5) of the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6903(5), as amended, including a substance listed or identified in 40 CFR 261; or

(d) any petroleum product.

~~(7)~~(8) "Natural resources" means land, fish, wildlife, biota, air, surface water, ground water, drinking water supplies, and any other such resources within the state of Montana owned, managed, held in trust or otherwise controlled by or appertaining to the state of Montana or a

political subdivision of the state.

~~(8)~~(9) (a) "Owns or operates" means owning, leasing, operating, managing activities at, or exercising control over the operation of a facility.

(b) The term does not include holding the indicia of ownership of a facility primarily to protect a security interest in the facility or other location unless the holder has participated in the management of the facility. The term does not apply to the state or a local government that acquired ownership or control through bankruptcy, tax delinquency, abandonment, lien foreclosure, or other circumstances in which the government acquires title by virtue of its function as sovereign, unless the state or local government has caused or contributed to the release or threatened release of a hazardous or deleterious substance from the facility. The term also does not include the owner or operator of the Milltown dam licensed under part 1 of the Federal Power Act (FERC license No. 2543-004) if a hazardous or deleterious substance has been released into the environment upstream of the dam and has subsequently come to be located in the reservoir created by such dam, unless such owner or operator is a person who would otherwise be liable for such release or threatened release under 75-10-715(1).

~~(9)~~(10) "Person" means an individual, trust, firm, joint stock company, joint venture, consortium, commercial entity,

partnership, association, corporation, commission, state or state agency, political subdivision of the state, interstate body, or the federal government, including a federal agency.

~~(10)~~(11) "Petroleum product" includes gasoline, crude oil (except for crude oil at production facilities subject to regulation under Title 82), fuel oil, diesel oil or fuel, lubricating oil, oil sludge or refuse, and any other petroleum-related product or waste or fraction thereof that is liquid at standard conditions of temperature and pressure (60 degrees F and 14.7 pounds per square inch absolute).

~~(11)~~(12) "Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of a hazardous or deleterious substance either directly into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous or deleterious substance), but excludes releases confined to the indoor workplace environment, the use of pesticides as defined in 80-8-102(30) when they are applied in accordance with approved federal and state labels, and the use of commercial fertilizers as defined in 80-10-101(2) when applied as part of accepted agricultural practice.

~~(12)~~(13) "Remedial action" includes all notification, investigation, administration, monitoring, cleanup, restoration, mitigation, abatement, removal, replacement,

acquisition, enforcement, legal action, health studies, feasibility studies, and other actions necessary or appropriate to respond to a release or threatened release.

~~(13)~~(14) "Remedial action contract" means a written contract or agreement entered into by a remedial action contractor with the state, or with a potentially responsible party acting pursuant to an order or request issued by the department, the United States, or any federal agency, to provide a remedial action with respect to a release or threatened release of a hazardous or deleterious substance.

~~(14)~~(15) "Remedial action contractor" means:

(a) any person who enters into and is carrying out a remedial action contract; or

(b) any person who is retained or hired by a person described in subsection ~~(14)(a)~~(15)(a) to provide services relating to a remedial action.

~~(15)~~(16) "Remedial action costs" means reasonable costs that are attributable to or associated with a remedial action at a facility, including but not limited to the costs of administration, investigation, legal or enforcement activities, contracts, feasibility studies, or health studies."

Section 5. Section 75-10-711, MCA, is amended to read:

"75-10-711. Remedial action -- orders -- penalties -- judicial proceedings. (1) The department may take remedial

require any person liable under 75-10-715(1) to take immediate action to contain, remove, and abate a release of a hazardous or deleterious substance at a site described in 75-5-605(1)(b)

action whenever:

(a) there has been a release or there is a substantial threat of a release into the environment that may present an imminent and substantial endangerment to the public health, welfare, or safety or the environment; and

(b) the appropriate remedial action will not be done properly and expeditiously by any person liable under 75-10-715(1).

(2) The department shall ~~take remedial action whenever there is a substantial threat of a release of a hazardous or deleterious substance in waters moving from a site that is regulated under the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Public Law 96-510, into an aquifer.~~

~~(2)~~(3) Whenever the department is authorized to act pursuant to subsection (1) or (2) or has reason to believe that a release has occurred or is about to occur, the department may undertake remedial action in the form of any investigation, monitoring, survey, testing, or other information-gathering as authorized by 75-10-707 that is necessary and appropriate to identify the existence, nature, origin, and extent of the release or the threat of release and the extent and imminence of the danger to the public health, safety, or welfare or the environment.

~~(3)~~(4) Any person liable under 75-10-715(1) must take

immediate action to contain, remove, and abate the release. Except as provided in 75-10-712, the department is authorized to draw upon the fund to take action under subsection (1) or (2) if it has made diligent good faith efforts to determine the identity of the person or persons liable for the release or threatened release and:

(a) is unable to determine the identity of the liable person or persons in a manner consistent with the need to take timely remedial action; or

(b) the person or persons determined by the department to be liable under 75-10-715(1) have been informed in writing of the department's determination and have been requested by the department to take appropriate remedial action but are unable or unwilling to take action in a timely manner; and

(c) the written notice to each person informs him that if he is subsequently found liable pursuant to 75-10-715(1), he may be required to reimburse the fund for the state's remedial action costs and may be subject to penalties pursuant to 75-10-715(3).

~~(4)~~(5) Whenever the department is authorized to act pursuant to ~~subsection~~ subsections (1) and (2) or has reason to believe that a release that may pose an imminent and substantial threat to public health, safety, or welfare or the environment has occurred or is about to occur, it may

issue to any person liable under 75-10-715(1) cease and desist, remedial, or other orders as may be necessary or appropriate to protect public health, safety, or welfare or the environment.

~~(5)~~(6) A person who violates or fails or refuses to comply with an order issued under 75-10-707 or this section may, in an action brought to enforce the order, be assessed a civil penalty of not more than $10,000 for each day in which a violation occurs or a failure or refusal to comply continues, except that a person who violates or fails or refuses to comply with an order issued under subsection (2) may, in an action brought to enforce the order, be assessed a civil penalty of not more than $25,000 for each day in which a violation occurs or a failure or refusal to comply continues. In determining the amount of any penalty assessed, the court may take into account the nature, circumstances, extent, and gravity of the noncompliance and, with respect to the person liable under 75-10-715(1), his ability to pay; any prior history of such violations; the degree of culpability; the economic benefit or savings, if any, resulting from the noncompliance; and any other matters as justice may require. Civil penalties collected under this subsection must be deposited into the environmental quality protection fund established in 75-10-704.

~~(6)~~(7) A court has jurisdiction to review an order

issued under 75-10-707 or this section only in the following actions:

(a) an action under 75-10-715 to recover remedial action costs or penalties or for contribution;

(b) an action to enforce an order issued under 75-10-707 or this section;

(c) an action to recover a civil penalty for violation of or failure to comply with an order issued under 75-10-707 or this section; or

(d) an action by a person to whom an order has been issued to determine the validity of the order, only if the person has been in compliance and continues in compliance with the order pending decision of the court.

~~(7)~~(8) In considering objections raised in a judicial action regarding orders issued under this part, the court shall uphold and enforce an order issued by the department unless the objecting party can demonstrate, on the administrative record, that the department's decision to issue the order was arbitrary and capricious or otherwise not in accordance with law.

~~(8)~~(9) Instead of issuing a notification or an order under this section, the department may bring an action for legal or equitable relief in the district court of the county where the release or threatened release occurred or in the first judicial district as may be necessary to abate

any imminent and substantial endangerment to the public health, safety, or welfare or the environment resulting from the release or threatened release."

Section 6. Section 75-10-704, MCA, is amended to read:

"75-10-704. Environmental quality protection fund. (1) There is created in the state special revenue fund an environmental quality protection fund to be administered as a revolving fund by the department. The department is authorized to expend amounts from the fund necessary to carry out the purposes of this part.

(2) The fund may be used by the department only to carry out the provisions of this part and for remedial actions taken by the department pursuant to this part in response to a release of hazardous or deleterious substances.

(3) The department shall:

(a) establish and implement a system for prioritizing sites for remedial action based on potential effects on human health and the environment; and

(b) investigate, negotiate, and take legal action, as appropriate, to identify responsible parties, to obtain the participation and financial contribution of responsible parties for the remedial action, to achieve remedial action, and to recover costs and damages incurred by the state.

(4) There must be deposited in the fund:

(a) all penalties, natural resource damages, and remedial action costs recovered pursuant to 75-10-715;

(b) all administrative penalties assessed pursuant to 75-10-714 and all civil penalties assessed pursuant to 75-10-711~~(5)~~(6);

(c) funds appropriated to the fund by the legislature; and

(d) funds received from the interest income of the resource indemnity trust fund pursuant to 15-38-202.

(5) Whenever a legislative appropriation is insufficient to carry out the provisions of this part and additional money remains in the fund, the department shall seek additional authority to spend money from the fund through the budget amendment process provided for in Title 17, chapter 7, part 4.

(6) Whenever the amount of money in the fund is insufficient to carry out remedial action, the department may apply to the governor for a grant from the environmental contingency account established pursuant to 75-1-1101.

(7) The department shall submit to the legislature at the beginning of each regular session a complete financial report on the fund, including a description of all expenditures made since the preceding report."

Section ~~8~~ 7. Section 75-10-712, MCA, is amended to read:

"75-10-712. Emergency action. If the department

determines that immediate response to an imminent threat to public health, safety, or welfare or the environment is necessary to avoid substantial injury or damage to persons, property, or resources, remedial action may be taken pursuant to 75-10-711(1) or (2) without the prior written notice required by 75-10-711~~(3)~~(4). The department shall give subsequent written notice to the person liable under 75-10-715(1) within 5 days after the action is taken, describing the circumstances which required the action to be taken without prior notice."

Section ~~9~~ 8. Section 75-10-714, MCA, is amended to read:

"75-10-714. Administrative penalties. (1) In lieu of proceeding under 75-10-711~~(5)~~(6), the department may assess penalties of not more than $1,000 per day per violation against a person liable under 75-10-715(1) for a release or threat of release who has failed or refused to comply with an order issued by the department pursuant to 75-10-711~~(4)~~(5) or against a person who has failed or refused to comply with an order issued by the department pursuant to 75-10-707(5).

(2) In determining the amount of any penalty assessed pursuant to this section, the department shall take into account the nature, circumstances, extent, and gravity of the noncompliance and, with respect to the person liable under 75-10-715(1), his ability to pay; any prior history of

such violations; the degree of culpability; the economic benefit or savings, if any, resulting from the noncompliance; and any other matters as justice may require.

(3) An administrative penalty may not be collected pursuant to this section unless the person charged with the noncompliance is given notice and opportunity for a hearing with respect to the noncompliance. The notice and opportunity for a hearing must conform to the requirements of Title 2, chapter 4, part 6.

(4) A person against whom a penalty is assessed under this section may obtain judicial review of the penalty as provided for in Title 2, chapter 4, part 7.

(5) Administrative penalties payable under this section must be deposited in the environmental quality protection fund established in 75-10-704."

Section ~~10~~ 9. Section 75-10-715, MCA, is amended to read:

"75-10-715. Liability -- reimbursement and penalties -- proceedings -- defenses. (1) Notwithstanding any other provision of law and subject only to the defenses set forth in subsection (5), the following persons are jointly and severally liable for a release or threatened release of a hazardous or deleterious substance from a facility:

(a) a person who owns or operates a facility where a hazardous or deleterious substance was disposed of;

(b) a person who at the time of disposal of a hazardous

or deleterious substance owned or operated a facility where the hazardous or deleterious substance was disposed of;

(c) a person who generated, possessed, or was otherwise responsible for a hazardous or deleterious substance and who, by contract, agreement, or otherwise, arranged for disposal or treatment of the substance or arranged with a transporter for transport of the substance for disposal or treatment; and

(d) a person who accepts or has accepted a hazardous or deleterious substance for transport to a disposal or treatment facility.

(2) A person identified in subsection (1) is liable for the following costs:

(a) all remedial action costs incurred by the state; and

(b) damages for injury to, destruction of, or loss of natural resources caused by the release or threatened release, including the reasonable technical and legal costs of assessing and enforcing a claim for the injury, destruction, or loss resulting from the release, unless the impaired natural resources were specifically identified as an irreversible and irretrievable commitment of natural resources in an approved final state or federal environmental impact statement or other comparable approved final environmental analysis for a project or facility that

was the subject of a governmental permit or license and the project or facility was being operated within the terms of its permit or license.

(3) If the person liable under 75-10-715(1) fails, without sufficient cause, to comply with a department order issued pursuant to 75-10-711~~(4)~~(5) or to properly provide remedial action upon notification by the department pursuant to 75-10-711~~(3)~~(4), the person may be liable for penalties in an amount not to exceed two times the amount of any costs incurred by the state pursuant to this section.

(4) The department may initiate civil proceedings in district court to recover remedial action costs, natural resource damages, or penalties under subsections (1) through (3). Proceedings to recover costs and penalties must be conducted in accordance with 75-10-722. Venue for any action to recover costs, damages, or penalties lies in the county where the release occurred or where the person liable under 75-10-715(1) resides or has its principal place of business or in the district court of the first judicial district.

(5) No person is liable under subsections (1) through (3) if that person can establish by a preponderance of the evidence that:

(a) the department failed to follow the notice provisions of 75-10-711 when required;

(b) the release did not emanate from any vessel,

vehicle, or facility to which the person contributed any hazardous or deleterious substance or over which the person had any ownership, authority, or control and was not caused by any action or omission of the person;

(c) the release or threatened release occurred solely as a result of:

(i) an act or omission of a third party other than either an employee or agent of the person; or

(ii) an act or omission of a third party other than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the person, if the person establishes by a preponderance of the evidence that he:

(A) exercised due care with respect to the hazardous or deleterious substance concerned, taking into consideration the characteristics of the hazardous or deleterious substance in light of all relevant facts and circumstances; and

(B) took precautions against foreseeable acts or omissions of a third party and the consequences that could foreseeably result from those acts or omissions;

(d) the release or threat of release occurred solely as the result of an act of God or an act of war;

(e) the release or threatened release was from a facility for which a permit had been issued by the

department, the hazardous or deleterious substance was specifically identified in the permit, and the release was within the limits allowed in the permit;

(f) in the case of assessment of penalties under subsection (3), that factors beyond the control of the person prevented the person from taking timely remedial action; or

(g) the person accepted only household refuse (garbage, trash, or septic tank sanitary wastes generated by single or multiple residences, hotels, motels, restaurants, or similar facilities) for transport to a solid waste disposal facility, unless that person knew or reasonably should have known that the hazardous or deleterious substance was present in the refuse.

(6) (a) For the purpose of subsection (5)(c)(ii), the term "contractual relationship" includes but is not limited to land contracts, deeds, or other instruments transferring title or possession, unless the real property on which the facility is located was acquired by the person after the disposal or placement of the hazardous or deleterious substance on, in, or at the facility and one or more of the following circumstances is also established by the person by a preponderance of the evidence:

(i) At the time the person acquired the facility, the person did not know and had no reason to know that a

hazardous or deleterious substance that is the subject of the release or threatened release was disposed of on, in, or at the facility.

(ii) The person is a governmental entity that acquired the facility by escheat, lien foreclosure, or through any other involuntary transfer or acquisition or through the exercise of eminent domain authority by purchase or condemnation.

(iii) The person acquired the facility by inheritance or bequest.

(b) In addition to establishing one or more of the circumstances in subsection (6)(a)(i) through (6)(a)(iii), the person shall establish that he has satisfied the requirements of subsections (5)(c)(i) or (5)(c)(ii).

(c) To establish that the person had no reason to know, as provided in subsection (6)(a)(i), the person must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability. For purposes of assessing this inquiry, the following must be taken into account:

(i) any specialized knowledge or experience on the part of the person;

(ii) the relationship of the purchase price to the value of the property if uncontaminated;

(iii) commonly known or reasonably ascertainable information about the property;

(iv) the obviousness of the presence or the likely presence of contamination on the property; and

(v) the ability to detect the contamination by appropriate inspection.

(d) (i) Nothing in subsections (5)(b) and (5)(c) or in this subsection (6) may diminish the liability of a previous owner or operator of the facility who would otherwise be liable under this part.

(ii) Notwithstanding this subsection (6), if the previous owner or operator obtained actual knowledge of the release or threatened release of a hazardous or deleterious substance at the facility when the person owned the real property and then subsequently transferred ownership of the property to another person without disclosing the knowledge, the previous owner is liable under subsections (1) through (3) and no defense under subsection (5)(b) or (5)(c) is available to that person.

(e) Nothing in this subsection (6) affects the liability under this part of a person who, by any act or omission, caused or contributed to the release or threatened release of a hazardous or deleterious substance that is the subject of the action relating to the facility."

-End-

EXHIBIT 32
2-15-91
380

Amendments to House Bill No. 380
First Reading Copy

Requested by Rep. Daily
For the Committee on Natural Resources

Prepared by Deborah Schmidt
February 11, 1991

1. Title, lines 4 through 6.
Following: "REQUIRE" on line 4.
Strike: the remainder of lines 4 and 5 through "SUBSTANCES" on line 6
Insert: "IMMEDIATE ACTION TO CONTAIN, REMOVE, AND ABATE A RELEASE OF A HAZARDOUS OR DELETERIOUS SUBSTANCE AT CERTAIN SITES"

2. Title, line 9.
Following: line 8
Strike: "75-10-701,"

3. Page 4, lines 21 and 22.
Following: "formation" on line 21.
Strike: the remainder of line 21 through "use" on line 22

4. Page 5, lines 5 through 8.
Following: "shall" on line 5.
Strike: the remainder of subsection (2) in its entirety
Insert: "establish and implement a system for prioritizing sites for remedial action based on potential effects on human health and the environment."

5. Page 5, lines 16 and 17.
Following: "present" on line 16.
Insert: "to cause pollution of an aquifer: (i)"
Following: "at a"
Insert: "national priority list"
Following: "site"
Strike: "regulated under"
Insert: "as defined by"

6. Page 5, line 19.
Following: "96-510"
Strike: ", to cause pollution of an aquifer"
Insert: "; and
(ii) where mining has left an abandoned open pit as described in 82-4-336(5)"

7. Page 6, line 24 through page 11, line 22.
Strike: section 5 in its entirety
Renumber: subsequent sections

(MORE ON NEXT PAGE)

8. Page 12, lines 9 through 14.
Following: "shall" on line 9.
Strike: the remainder of subsection (2) in its entirety
Insert: "require any person liable under 75-10-715(1) to take immediate action to contain, remove, and abate a release of a hazardous or deleterious substance at a site described in 75-5-605(1)(b)."

EXHIBIT 33
DATE 2-15-91
660

Amendments to House Bill No. 660
First Reading Copy

Requested by Rep. Cohen
For the Committee on Natural Resources

Prepared by Paul Sihler
February 15, 1991

1. Title, line 6.
Strike: "INDIVIDUAL"
Insert: "PERSON"

2. Title, line 7.
Strike: "INDIVIDUAL'S"
Insert: "PERSON'S"

3. Page 1, line 15.
Following: "(1)"
Insert: "(a)"

4. Page 1, line 21.
Following: "hazard"
Insert: "or violate the laws governing the disposal of hazardous or deleterious substances.

(b) This part does not apply to the operation of an electric generating facility, to the drilling, production, or refining of natural gas or petroleum, or to the operation of a mine, mill, smelter, or electrolytic reduction facility"

5. Page 1, line 22.
Strike: "exclusion"
Insert: "exclusions"

6. Page 1, line 23.
Strike: "does"
Insert: "do"

7. Page 1, line 24.
Strike: "which"
Insert: "that"

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VISITOR'S REGISTER

Natural Resources COMMITTEE BILL NO. HB 586

DATE 2-15-91 SPONSOR(S) Swysgood

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JAY DOWNEN	Montana Elec. Cooperatives			

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Natural Resources COMMITTEE BILL NO. HB 630

DATE 2-15-91 SPONSOR(S) McCulloch

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Bill Good	Dept of MA	X	

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Natural Resources COMMITTEE BILL NO. HB 670

DATE 2-15-91 SPONSOR(S) Daily

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Natural Resources COMMITTEE BILL NO. HB 639

DATE 2-15-91 SPONSOR(S) S.J. Hansen

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Mitzi Schwab	DHES	639		X

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Natural Resources COMMITTEE BILL NO. HB 637

DATE 2-15-91 SPONSOR(S) Becker

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Kristin Page	MONTPIRG	637		X
Owen Cox	SELF	637		X
Brad Culver Helena	AMTOP, Nitro Green	637	X	
John M. Bass / Missoula	AMTOP, Lawn Master	637	X	
MARY SADAJ / Butte	AMTOP / Nitro Green	637	X	
Dennis Roberts / Billings	AMTOP - ChemLawn	637	X	
Will Snodgrass / MSLA	MFCE	637		X
TOM A. WHITMER	WHITMER'S SPRAYING SERVICE	637	X	
Kevin Ferguson	AMTOP, Nitro-Green	637	X	
Scott Selstad	Lawn Ranger AMTOP	637	X	
Doug Johnson	Cascade Co.	637	X	
ANDREW SAMUELS	LAWN RANGER (BOZEMAN)	637	X	
GREG ANSDEN-HAEGELE	MONTPIRG	637		X

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Natural Resources COMMITTEE BILL NO. HB 637

DATE 2-15-91 SPONSOR(S) BECKER

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NAME AND ADDRESS	REPRESENTING	BILL	OPPOSE	SUPPORT
Roger Hearst	West Mont Spray Ser	637	X	
Robie Baldwin-Culver	AMTOP, Nitro-Green	637	X	
Tom Herrin	Lawn Ranger	637	X	
Gordon Herrin	Concerned Cit.	637	X	
MARK KELLER	Helena Housing Authority	637	X	
Larry Hoffman	Self	637	X	
John Semple	MAFA (Aerial Applicator) AMTOP (Tree/LAWN Appli.)	637	X	
LARRY CHVILICEK	NITRO-GREEN BOZEMAN A.M.T.O.P.			
Steven Hartman	Pintler Audubon	637		X
Linda Lee	Montana Audubon Legislative Fund	637		X
David Burch	Mt. Weed Control Assoc	637	X	
Betty Tisdale	Myself	637	X	
Ed Homer	Self	637	X	

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Natural Resources COMMITTEE BILL NO. HB637

DATE 2-15-91 SPONSOR(S) Becker

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James V. Hoban	Nitro-Green	637	X	
Jim Sangrover	AERO	637		✓

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Natural Resources COMMITTEE BILL NO. HB 607

DATE 2-15-91 SPONSOR(S) Raney

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NAME AND ADDRESS	REPRESENTING	BILL	OPPOSE	SUPPORT
Dave Anderson	Jefferson	607		X
Wayne Wetzel	DNRC	586		X
Larry Nordell	DNRC	566		X
Charles Homer	DHES	607		X

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