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*The University of Montana*

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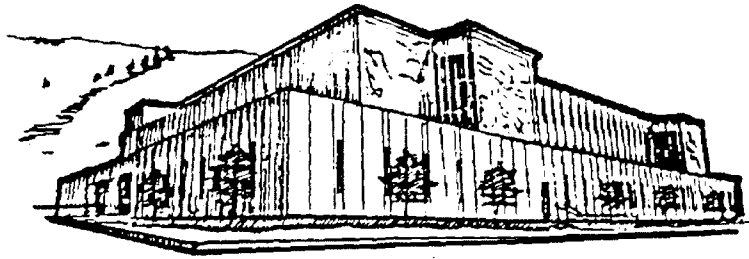
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IGNORING THE OBVIOUS:

THE AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY'S  
FAILURE TO MONITOR PUBLIC HEALTH ON THE CLARK FORK RIVER  
SUPERFUND SITES

by

Lilly Tuholske

B. S. University of Wisconsin--Madison, 1979

Presented in partial fulfillment of the requirements

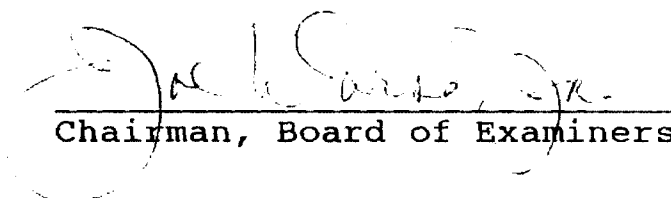
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Master of Arts in Journalism

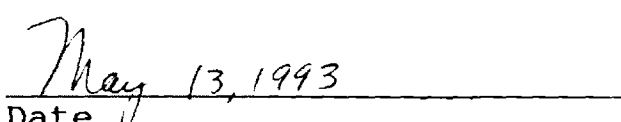
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Ignoring the Obvious: The Agency For Toxic Substances and Disease Registry's Failure to Monitor Public Health on the Clark Fork River Superfund Sites (50 PAGES)

Director: Joe Durso, Jr. *JD*

Montana holds the nation's largest hazardous waste site: a 120-mile stretch of the Clark Fork River that passes over land contaminated with arsenic, lead, copper, mercury, cadmium and pentachlorophenol - a century's worth of mining wastes. In 1983, the U.S. Environmental Protection Agency designated this land as four separate but contiguous federal Superfund sites on its National Priorities List, thus making the region eligible for cleanup. Since attaining National Priorities List status, relatively little cleanup has been completed.

This study documents the government's performance on these Superfund sites, particularly the failings of the Agency for Toxic Substances and Disease Registry, an agency established under the Comprehensive Environmental Response, Compensation and Liability Act (the 1980 Superfund Law). The agency is to monitor public health on federal Superfund sites, thereby helping the EPA determine which areas are most dangerous. However, since the agency was created in 1983, it has suffered from inadequate funding, poor leadership and misunderstanding, especially among EPA personnel who work on Superfund projects.

More than 40,000 people live on the Clark Fork River Superfund sites. Records from Montana's Office of Public Instruction and Vital Records and Statistics Bureau reveal that the population residing on these sites has experienced high rates of disease and mortality as a whole, along with high rates of learning disorders in children. Despite its claims to the contrary, to date, the Agency for Toxic Substances and Disease Registry has not completed health assessments required by law on the four sites, nor conducted a comprehensive health study of the region. The result of this failing is that people living on the Clark Fork sites have not been adequately informed about possible health risks associated with the region's contaminants.

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## Chapter One: Dominion of Poison

On the crest of the east ridge above Butte, Montana, stands Our Lady of the Rockies, a 90-foot white statue, a modern version of Mary, the mother of Christ. Our Lady is visible for miles as she presides with hands outstretched, not over a spectacular mountain panorama, but over the nation's largest toxic dumping ground. Here lies 100 years of mining wastes along Montana's Clark Fork River.

The statue's dominion begins over a murky little stream in the Clark Fork's headwaters. Silver Bow Creek runs out of the mountains and through the steeply sloped town of Butte. For decades, no fish have lived in Silver Bow Creek, nor for that matter, have insects nor many of the various microbes one would expect to find in a mountain stream. Life abandoned the creek when it became a waste dump to carry away mixtures of lead, arsenic, mercury, copper and zinc from Butte's mines.

Butte has lived and died for mining. During the last century some \$22 billion worth of gold, silver and copper have been raked from beneath its mountains, with the bulk of the profits going to the Anaconda Mining Company. Beginning in the 1870s, Butte's mining empires dominated Montana politics, filled the state's coffers and colored the



region's history until the mid-1970s, when large-scale mining was phased out.

Remaining under the city are thousands of miles of abandoned mine shafts. But it is above ground where the remnants of mining are most dramatic: a scoured landscape, nowhere near resembling the graceful collection of mountains it once was. The most obvious relic is the Berkeley Pit. More than a mile across and one half-mile deep, the pit is a gigantic hole in the ground, a void where a mountain once stood. Formerly the largest truck-operated copper mine in the world, the Berkeley Pit is now the deepest and the most polluted body of water in Montana.

If Our Lady could actually see, on a clear day her gaze would pass over a massive smoke stack that stands some 30 miles downstream. The Washoe Stack looms 585 feet from its base atop a densely black mountain of slag interspersed with piles of blue, white and brown arsenic-rich flue dust and tailings leftover from the Anaconda Mining Company's Washoe Smelter.

If you stand on the slag mountain at the base of the Washoe Stack and look out, the vision below is not of Anaconda homes and businesses but of a moonscape of barren soil where nothing grows at all. Spilling out to the northeast are the Anaconda and Opportunity ponds, thousands of acres of brown, orange and white settling grounds holding upwards of 3 million cubic yards of smelting wastes.

From just outside Anaconda, the Clark Fork River flows northwest across farms and ranches. Along its banks are barren crusty white patches of earth - what the locals call slickens - where mining sediments have accumulated. The river meanders for 120 miles until it is dammed just outside of Milltown, Montana. There, what used to be a reservoir behind the dam is now more like a swamp, choked with deadly sediments that weren't captured in any of the settling ponds upstream.

In 1977, the Atlantic Richfield Company purchased the Anaconda Mining Company, holdings that included the Berkeley Pit and the Anaconda Smelter. Five years later two things happened: Butte's mines were shut down and the region's environmental problems were discovered.

A local health department worker running routine tests on residential well water found arsenic in the drinking water of several Milltown homes. The source of the arsenic was leachate from the Milltown dam reservoir that had worked its way into the groundwater. The arsenic discovery prompted the U.S. Environmental Protection Agency to designate all the land from Butte to Milltown to its National Priorities List as four separate but adjacent sites eligible to be cleaned up with federal Superfund monies. Together, the four units comprise the nation's largest Superfund project.

The EPA found that the contaminants in the area varied considerably. In Butte, entire neighborhoods were built atop waste rock from the mines. Soils, some oozing elemental mercury, held upwards of 3,000 parts per million lead. In Anaconda, arsenic that for 80 years had spewed from the Washoe Stack permeated ranch land and residential yards and gardens alike. Downstream, copper spoiled the Clark Fork when summer thunder storms occasionally washed soil from the slickens into the river, killing thousands of fish. Throughout all, cadmium contaminated soil and threatened groundwater. And on one 40-acre tract where mine timbers and railroad ties had been treated, pentachlorophenol, a carcinogen, percolated through the ground and into Silver Bow Creek.

Thus lay the dirty little secret of beautiful Montana, which so recently has earned national attention as the nation's "last best place." None of the literature urging tourists to visit the region's historic mining district mentions that the area is still managed under the Superfund program. No sign tells unwary out-of-towners they'll be venturing into a hazardous waste zone simply by driving into uptown Butte or stopping to fish along the upper reaches of the Clark Fork. Only quietly is it mentioned that together, the U.S. Environmental Protection Agency and the Atlantic Richfield Company have spent upwards of \$54 million over the

past 10 years trying to figure out how to rid the region of its toxic wastes.

Protecting public health never was taken seriously by the mining barons nor their thousands of employees during the years when the mines held the promise of Montana's future. Nor is public health a predominant issue today, not for the residents, not for the politicians, not for the EPA. What's perhaps more surprising is that 10 years after the area was designated for cleanup under the Superfund program, public health receives only token acknowledgement by the agency created by Congress to monitor and protect health on federal Superfund sites, the Agency for Toxic Substances and Disease Registry. To date, that agency has not undertaken any comprehensive health study of the region, nor has it fulfilled its own requirements for conducting health assessments on the four Superfund sites.

Never mind that scientists have long recognized that mining communities nationwide are plagued with health problems. In this regard, Butte and Anaconda, with populations of nearly 34,000 and 10,000 respectively, are no different. In 1991, two researchers studying impacts from large-scale mining found high rates of mortality and disease in Butte and Anaconda. This high rate of death may in part be attributed to occupational hazards incurred by the men who worked in the mines or at the smelter. But what cannot be so easily accounted for are the high rates of certain

types of cancer among women whose only connection with mining was that they lived in the area.

Various entities have conducted some medical tests. For example, the Atlantic Richfield Company, which may ultimately be required to pay for cleanup, has financed a University of Cincinnati study of blood lead in Butte's children. The Centers for Disease Control conducted urinary arsenic tests in Anaconda. And the Agency for Toxic Substances and Disease Registry did study arsenic and lead exposure among residents of Rocker, a small community outside of Butte.

These specific studies, however, failed to address what local residents allude to in terms entirely unscientific. "It seems like every family gathering I go to...everybody talks about so and so's cancer," said Mary Lou Sullivan, who was born in Butte and raised in Anaconda. Such talk is typical. Cancer is rampant in Butte. Anyone who knows anything about Butte knows that.

A faith-filled individual might believe that Our Lady of the Rockies protects her people. One might also imagine that Our Lady grasps the connection between hundreds of square miles of mine wastes and the health of those who live here. Certainly, no other entity, not the local health department, nor the state Department of Health and Environmental Sciences, nor the EPA, nor the Agency for Toxic Substances and Disease Registry is any more likely a

source of information about public health than is Our Lady of the Rockies herself. All are equally mute.

## Chapter Two: A Toxic Revelation

On a late-November night in Washington, D.C. in 1980, Curtis Moore hatched an idea that he hoped would begin to solve the mysteries behind toxic wastes and public health. During the previous decade, Moore had served as counsel on the Senate Committee on Environment and Public Works, coordinating hearings on the health effects of exposure to toxic chemicals. These hearings were precursors to the Comprehensive Environmental Response, Compensation and Liability Act, better known as the Superfund law. Now, on the eve of Superfund's passage, Moore was up late, struggling to find a way to put back the measures to protect public health that had been gutted from the original bill.

Oddly, Moore's involvement in Superfund had begun not from the government's concern over hazardous wastes, but rather when the oil industry complained to Congress because several states that had fallen victim to massive oil spills during the 1960s had enacted laws imposing taxes and liability on oil companies for cleanup. Oil industry executives balked at the mishmash of laws that arose and petitioned Congress to enact one blanket federal law that would preempt the various state laws. The federal law would establish a "superfund" that would pay for the cleanup of oil spills wherever they occurred.

While politicians and industry representatives wrangled over specifics of the Superfund proposal through the early 70s, the issue of toxic chemical spills and their subsequent effect on humans crept into the argument like an uninvited guest. Throughout the United States, reports of never-before-heard-of chemicals leaching into groundwater, oozing out of abandoned dumps and seeping into basements frequently filled the pages of national newspapers and magazines. Thus began the national revelation: chemical wastes could be dangerous.

The Environmental Protection Agency identified some 6,000 hazardous waste sites nationwide and reported that at least 90 percent of hazardous wastes threatened the environment because of improper disposal. Twenty-seven of the 6,000 sites were positively linked to health problems - kidney damage, cancer, mutations, aborted pregnancies, to name a few.

Testifying at one hearing, Dr. David Rall, then director of the National Institute of Environmental Health Sciences, declared that the entire population of the United States was at risk from exposure to toxic chemicals. The Department of Health and Human Services concluded that "the scope of the health problems that could derive from chemical waste dumps...could be enormous."

Congress responded with a flurry of bills that in the aggregate proposed that the government create an emergency



response system to deal with the release of hazardous substances, that those responsible for the releases be liable for any cleanup costs and that victims injured or made ill be compensated. None of the bills passed, however, before the tale of Love Canal came to the fore.

When Love Canal homeowners began complaining of various health problems, in particular birth defects in their children that included double rows of teeth, cleft palate, enlarged heart, vision and hearing impairment and retardation, their concerns initially fell on deaf ears. Finally, studies revealed what Congress later called "startling" health problems: Unusually high incidents of attempted suicide, nervous breakdowns, hyperactivity in children, epilepsy, asthma and urinary tract infections. Nine of sixteen children born in one area had birth defects, a rate of 56 percent.

By the late 1970s, Moore knew well the tales of people being poisoned by toxic chemicals. He had gathered thousands of pages of testimony at hearings held in Washington, D.C., Niagara Falls, New York, Charles City, Iowa, and San Francisco, California. He had spent countless hours massaging the oil industry's Superfund bill into legislation that would cover the release of a myriad of toxic substances into the environment. (Ironically, oil was not one of them.) And he drafted the public health and

victim compensation portions of SB 1480, the 1980 Superfund law.

The Superfund law provided the EPA with the authority to determine the extent of hazardous waste contamination nationwide and enforce cleanup that would be paid for by the industries responsible. Sites would be ranked on the National Priorities List according to their relative risk. The EPA would be responsible for researching each site and orchestrating cleanup.

Said Moore in a recent interview, concern for the health of those who were exposed to toxic substances was the "driver" for Superfund.

"We concluded that there were a lot of people out there who were being injured by toxic chemicals - but probably in very subtle and insidious ways in which the legal system was ill-equipped to deal with," Moore said.

In writing Superfund, Moore wanted to provide legislation that would allow victims of toxic spills to be compensated.

"After all, the victim's only relationship to these incidents ordinarily is he's the poor sucker who got hit by the train," Moore said. "He's an innocent bystander."

The proposed legislation provided that polluters would not only be liable for the cost of cleanup but also to pay for damages incurred by any victims - damages to health or the pocketbook.

But by mid-year in 1980, after the Superfund bill had worked its way through the Congressional labyrinth, the politics in Washington were due to change considerably. Reagan was on the verge of defeating Carter, Congress would hold a lame duck session and industry representatives - who by now were adamantly opposed to Superfund - were feeling bold. Such boldness translated into a number of political maneuvers that succeeded in keeping the Superfund bill from being brought before the Senate until Congress was ready to adjourn. Though SB 1480 was released from committee on July 11, 1980, it didn't make it to the Senate floor for consideration until November.

"We were at the point where we had to start carving chunks of it off in order to get it considered by the full Senate," Moore said. "And finally it's obvious that we have to let go of victim's compensation as well," he said. "...It's the price we are going to have to pay [to get the bill considered by the full Senate.]"

Such a compromise did not rest lightly with Moore:

"At one o'clock in the morning, I'm sitting in my basement, trying to figure out what to do to take care of victims. And I become convinced that one of things we lack is adequate information on the health effects of toxic chemicals."

"Every place you go, it doesn't make any difference whether you go to Love Canal or Charles City or anyplace

else, if you look into PBB's or PCB's or dioxin or whatever, you're overwhelmed by the fact that what we don't know is vastly greater than what we do know."

Moore decided to give the notion of assisting victims of toxic spills one last try. Forget creating a scheme to compensate victims, he thought. Instead, Moore decided to create an agency and give it the sole responsibility of monitoring health on Superfund sites.

Arriving on Capitol Hill the following morning, Moore described his plan for a health agency to his colleagues and the Senators on the committee, who agreed to his proposal. Hence, on December 11, 1980, when Superfund was signed into law, the Agency for Toxic Substances and Disease Registry was born without so much as consulting the executive branch of government, nor the Department of Health and Human Services under which it would be housed. In hindsight, Moore is the first to admit that such a footless beginning did not bode well for his new agency, nor the people it was supposed to protect.

### Chapter Three: A Plan Gone Awry

The Agency for Toxic Substances and Disease Registry, though derived from a well-intentioned plan, is a bastard child born of Congressional finagling. Moore's goal was to establish a health agency that would help the EPA determine which hazardous waste sites were most dangerous, whether human exposure was occurring (and, if so, what should be done about it) and whether additional health studies were needed. What resulted instead was a tiny, underfunded organization, without solid leadership, that is unable to complete the primary task that was set out for it - conducting health assessments.

On the Clark Fork River Superfund project, the agency's bumbling can be traced to a decade ago. Early in 1983, EPA investigators who were working on the Clark Fork River Superfund project submitted soil data collected in Anaconda, Mont., to a tiny organization called the Superfund Implementation Group that was based at the Centers for Disease Control in Atlanta. Personnel who worked for the Superfund Implementation Group passed the data to the Centers for Disease Control's Center for Environmental Health, where scientists reviewed the data and then made recommendations back to the Superfund Implementation Group.

Georgi Jones, who ran the Superfund Implementation Group, wrote a letter to the EPA describing the scientists' concerns. Her letter stated that the Anaconda site held toxins that were known to cause health problems. The center's scientists had expressed their concern over "apparent open public access" to contaminated areas, Jones wrote. They questioned whether the surrounding land could be suitable "for agriculture, livestock, or even timber cutting."

Jones's letter, dispatched from one federal department on behalf of scientists who worked for another, is the first indication that Curtis Moore's plan had gone awry, at least as far as the Clark Fork River site was concerned.

Though Georgi Jones wrote her letter more than two years after Superfund's enactment, Moore's Agency for Toxic Substances and Disease Registry didn't yet exist. The Department of Health and Human Services had avoided establishing the agency by instead creating Jones's ad hoc Superfund Implementation Group.

Jones said she was instructed by the assistant Secretary of Health in 1981 to coordinate the work of several agencies, such as the National Library of Medicine, the National Institute of Occupational Safety and Health and others, as it pertained to public health on Superfund sites. She set up her office in 1981 in Atlanta within the CDC and

administered a staff of 14, eight of whom were based in EPA regional offices around the United States.

Back then, Stephen Lester, a Harvard-trained toxicologist, was working as a consultant for the Love Canal Homeowner's Association. He recalled the Superfund Implementation Group's early days this way:

"What happened as far as we can tell is that the agency was given no money. They were given no specific task. They had no leader, in terms of a director. And they had no direction other than what was laid out in Superfund, which was very vague."

Late in 1982, the Environmental Defense Fund, the Chemical Manufacturers Association and the American Petroleum Institute, an odd assemblage of bedfellows if there ever was one, sued the government for its failure to establish the ATSDR. The case was resolved when the government agreed to finally create the agency. In April, 1983, the Public Health Service issued a notice in the Federal Register announcing that the ATSDR was created to "prevent or mitigate adverse human health effects and diminished quality of life resulting from exposure to hazardous substances in the environment."

"All of a sudden, we were an agency instead of part of CDC," Jones said, noting that the Federal Register item did little to change her day to day operations. Jones said she believed that other agencies were already carrying out many

of the ATSDR's mandates. In fact, just the opposite was true.

According to the Superfund law, the Agency for Toxic Substances and Disease Registry was to establish a national registry of individuals exposed to toxic substances and a registry of "serious diseases and illnesses" caused by exposure; to collect and maintain literature concerning the health effects of toxic substances; to maintain a list of areas closed to the public because of toxic substance contamination; to provide medical care and testing to exposed individuals, "including, but not limited to tissue sampling, chromosomal testing, epidemiological studies...;" and to conduct periodic studies to determine the relationship between exposure to toxic substances and illness.

But in 1983, no agency had established a national registry of persons exposed to toxic substances, nor developed a list of areas closed to the public, nor collected a comprehensive data base on toxic substances. Relatively few epidemiological studies had been initiated. Nowhere existed any comprehensive effort to monitor and protect public health on federal Superfund sites.

One reason for these failings was that the ATSDR was without its own director. Typically, a federal agency is autonomous. But the ATSDR was established sharing its chief



administrator with the Centers for Disease Control, a situation that remains in place today.

Said Lester, "So as a practical matter, what happened is that the people at CDC, who were evaluating health problems all around the country at Superfund and non-superfund sites, by default began doing the work that ATSDR was assigned." Lester said that people living on those sites were often confused as to who was doing the testing or what the testing was for. Often, Lester said, the CDC would design studies to test for one health problem when community residents were complaining of another.

Indeed, in 1985, it was the CDC, not the ATSDR, that conducted urinary arsenic studies on children living in Anaconda. The study resulted in the eventual relocation of families who lived in Anaconda's Mill Creek community, when their children were discovered to have extremely high levels of arsenic in their urine. (The moving of these families represents the only instance on the entire Clark Fork River Superfund project, where thousands of individuals live, when health studies resulted in the EPA's decision to move people from their homes.) To this day, EPA staffers who work on the Clark Fork River project confuse the ATSDR with the CDC.

But it is the ATSDR's token budget which can be even more directly attributed to the agency's failings. Normally, an independent federal agency submits its budget directly to the Office of Management and Budget for

approval. But in this case, the ATSDR submits its budget to the EPA for approval, an agency with which it competes for Superfund dollars.

In 1983, the ATSDR proposed a \$21 million budget. The EPA reduced the amount requested to \$3.2 million. For the next decade, the EPA annually reduced the ATSDR's requested budget, often by more than 20 percent. As if playing a cat and mouse game, Congress regularly provided the ATSDR with more funds than requested by the EPA, but never at the level originally requested by the ATSDR.

The ATSDR finally adopted its formal mission in 1985, five years after Superfund's enactment. By that time, Congress was holding hearings for a Superfund reauthorization bill, including hearings on the performance of the ATSDR. Reauthorization occurred in October 1986, under the Superfund Amendments and Reauthorization Act, dubbed SARA by its authors, one of whom was Curtis Moore.

The Senate report that accompanied SARA stated that while "protection of human health is the highest and ultimate goal of the nation's environmental laws,...the health-related authorities of [the Superfund law] have not been adequately exercised."

Moore still had grave concern for human exposure to toxic substances on federal Superfund sites. Notwithstanding the ATSDR's difficulties in its early years,

Moore arranged that, via SARA, the agency's responsibilities would be substantially increased.

To accomplish these new tasks, SARA provided that the ATSDR would receive a minimum annual budget: \$50 million in 1987, increasing annually until 1991 when Superfund would be reauthorized. To date, however, the ATSDR has never received the minimum budget stipulated under SARA.

One of the most important new responsibilities delegated to the ATSDR was conducting health assessments on all 951 Superfund sites, the sum total that had been listed thus far. The law required that the assessments be completed by December, 1988, just 24 months after SARA's passage.

According to the bill, the public health assessments were to involve a study of the contaminants on the site, the potential ways people could get exposed to them, and what the consequences of exposure would be to the various individuals involved. SARA stipulated two purposes for the health assessments: (1) to decide whether human exposure to contaminants on a site should be reduced; and, (2) to decide whether additional health studies were necessary on a given site.

The sheer volume of work required in just two years was tremendous, especially given that in 1986 the ATSDR was a tiny agency with fewer than 100 employees. Such a short time period did not even allow the agency to develop

administrative procedures governing health assessments, much less to properly conduct the work.

Though ATSDR annual reports claim the agency completed the health assessments, in truth, the agency did nothing of the sort. To satisfy Congress, the agency instead re-labeled at least 165 documents as health assessments, documents that were actually reports already on file covering any number of unrelated topics.

In August 1991, the General Accounting Office, the investigative arm of Congress, discovered the re-labeled documents. Additionally, the GAO found that of the 786 health assessments that actually were completed, many were of "uneven quality and of questionable value." Most constituted no more than a few pages of text. Few contained any health data at all.

The result of the ATSDR's failings, the GAO said in its report, was that "communities have not been adequately informed about possible health effects" related to Superfund sites. Nor has the ATSDR had any substantial influence in driving decisions on Superfund sites via the reporting of health related matters, the GAO reported.

This failing is amply evident in Butte and Anaconda, both of which are included in the group of 165 sites for which the ATSDR re-labeled documents as health assessments.

The so-called health assessment for Butte is a memo written by an ATSDR staffer regarding whether people who

swam or waded in Silver Bow Creek would incur health problems. The memo doesn't address the widespread contamination in Butte nor does it determine whether Butte's 34,000 residents might be exposed to lead, pentachlorophenol, cadmium or any of the other contaminants that lace the streets of the town.

Likewise, the ATSDR document labeled as the health assessment for Anaconda is not a health assessment either. Instead, it is a letter from an ATSDR physician confirming the EPA's 1985 decision to move the Mill Creek families. As was the case for Butte, the so-called ATSDR health assessment for Anaconda did not address the widespread arsenic contamination in the community, nor possible exposure to arsenic among Anaconda residents.

The GAO report recommended that the ATSDR develop a plan to update previously inadequate health assessments and the agency concurred. In October 1991, William Roper, who has recently been asked by the Clinton administration to step down from his position as director of both the CDC and the ATSDR, wrote that ATSDR would revisit the 165 sites as a "prudent public health practice."

The 165 sites were prioritized in three categories, according to the nature of the health threat on each site. In ranking the sites, however, no mention was made that the ATSDR probably had inadequate information, given its dismal performance in the first place. So, while Anaconda and

Montana Pole (the 40-acre plot contaminated with pentachlorophenol) received high priority rankings and were slotted for re-evaluation by September of 1992, the re-evaluation of Butte and Milltown were postponed.

Mike Greenwell, ATSDR public affairs specialist, said that Butte received the lower ranking because its original health assessment did not classify Butte as a public health threat. But the so-called health assessment for Butte was not a health assessment at all. Furthermore, in 1986, an ATSDR staffer who visited Butte wrote in a memorandum that "multiple exposure pathways" existed in Butte and that the site represented a "potential health threat to some individuals in the area."

## Chapter Four: Risky Business

Sara Weinstock was born and raised in Butte. As a child, she played baseball on the now notorious Walkerville field, where the EPA discovered mercury seeping from the dirt, which itself was 6 percent lead. Now an EPA project manager, Weinstock has a standard joke she tells about her childhood exposure to lead when she brings visitors on a tour of the Butte Superfund site she manages:

"I could have been a surgeon," she says, stifling a giggle. "But because of all the lead I got in me growing up in Butte, all I ended up being able to do was work for the EPA."

Weinstock is responsible for assigning contracts to private firms that gather data in Butte and conduct risk analysis on behalf of the EPA. Risk analysis is the process the EPA uses to determine the degree of pollution on a site, whether cleanup is necessary and if so, what processes are to be used.

Ironically, the EPA's risk analysis is entirely separate from the ATSDR's health assessment work. Rather than gathering actual health data (which theoretically would be available from the ATSDR), the EPA involves itself with amassing data for establishing that a *potential* health

threat exists. Under Superfund, if the EPA establishes *potential* health risk, it can force the polluter to pay for cleanup. The EPA need not prove that actual health damages have occurred and in fact, it goes out of its way to avoid doing so.

EPA staffers working on the Clark Fork sites agree that gathering data enough to force payment for cleanup (in this case, by the Atlantic Richfield Company) is the driving force behind their work. If the EPA were required to establish that exposure to hazardous chemicals is actually occurring on each site, or that physical harm has occurred, cleanup would be mired in legal battles, the staffers say. For example, how can you define physical harm when a carcinogen has a 30-year lag time before taking its toll?

However, establishing *potential* risk, rather than actual harm, hasn't expedited cleanup along on the Clark Fork River. A November 1991 GAO report chastised the EPA because only two of 23 units within the four Clark Fork River sites had actually been cleaned up after the EPA and the Atlantic Richfield Company together had spent \$54 million over the past decade. Nearly half of the expenditures paid for studies. And in at least three cases, no cleanup plans resulted from the studies, the report said.

The EPA's use of risk analysis and the ATSDR's mandate to gather health data have never been compatible. Until recently, a memorandum of understanding between the two



agencies dictated that the ATSDR would not become involved in risk analysis nor the EPA in the gathering of health data.

Some contend that the schism is simply a turf battle. For whatever reason, so focussed are EPA personnel on their risk program, that they often don't see any need for the ATSDR's work. Several Montana EPA staffers admitted that they weren't sure what the ATSDR was supposed to do or how the agency's work would fit into their program. They say that it is the responsibility of the state health department, not the EPA, to request the ATSDR's involvement on a Superfund site.

Such a belief is contrary to the law. While the state and local health departments may request the ATSDR's involvement in a site, in the form of a health consultation, the ATSDR by definition is to be involved in all Superfund from the time each is proposed to the National Priorities List.

In the absence of the ATSDR's involvement, how adequate is the risk analysis?

Risk analysis is a high-tech guessing game that generates a number designating the relative risk to a specific illness (like cancer) that an individual incurs after coming into contact with a toxin. The number results from a computer analysis of data gathered from each site's soil, air and water as well as estimates concerning who

might come into contact with the contaminated medium, the frequency of that contact, and the like.

When the EPA's standards for risk are exceeded (for example, if the analysis points toward greater than one in 10,000 risk of an individual getting cancer), then a site must be cleaned up.

Stephen Lester, now science director for the Citizen's Clearinghouse for Hazardous Wastes, Inc., (which he co-founded with Love Canal homeowner, Lois Gibbs), points out that in some cases the industry that is ultimately responsible for paying for cleanup on Superfund sites has influenced the risk model or the analysis results.

Such was the case when an Atlantic Richfield Company-financed blood lead study among Butte's children ultimately resulted in the EPA adjusting its cleanup standard for lead-contaminated soils in Butte. The University of Cincinnati, which conducted the study, found that Butte children had blood lead levels lower than the national average.

While the EPA had originally proposed cleaning up soils with greater than 1,000 parts per million lead, it will now most likely clean up only those soils with greater than 1,500 parts per million lead. The practical result of the study is that the Atlantic Richfield Company will have saved itself considerable amounts of money because fewer areas in Butte will be cleaned up. This is the case even though prominent lead scientists have called for more stringent

lead cleanup, one saying that no more than 100 parts per million lead should be allowed in residential soils.

In its 1991 report, *Environmental Epidemiology, Public Health and Hazardous Wastes*, the National Academy of Sciences's Committee on Environmental Epidemiology called risk analysis "highly speculative and almost always relying on multiple assumptions of fact - some of which are entirely untestable." And Stephen Lester calls risk analysis "more art than science."

"The people at the EPA who do risk analysis believe it is science and believe the numbers that come out of it are real, which I think is the most dangerous part of the whole process," he said.

Sara Weinstock may joke about her childhood exposure to lead but scientists agree that any amount of lead, no matter how minuscule, has no place in the human body. Particularly dangerous in children, lead has been shown to diminish IQ, reduce a child's growth, and behave as a neurotoxin.

Absorption of arsenic also causes ill-health effects. At low levels, arsenic can cause stomach irritation; it can also cause heart abnormalities. Long term exposure to arsenic brings about skin changes and eventually, skin cancer. Cadmium, a carcinogen, also is linked to health problems, like kidney and heart disease, lung damage, and even death. With exposure to mercury, there's a similar story: fetal malformations, brain and kidney damage.

Finding the effects of environmental toxins is hardly ever easy. Linking cause and effect broadly across a community requires extensive study of vital statistics and health records. It requires going out and interviewing individuals. It requires asking the right questions, questions that are supposed to be asked when health assessments are completed.

Nevertheless, one doesn't have to look far to discover that both Silver Bow and Deer Lodge counties, home to Butte and Anaconda respectively, rank high for incidence of death and reportable disease within Montana and nationwide.

For example, Deer Lodge County ranked first and Silver Bow County was in the top five among Montana's most populous counties in death rate from heart disease in both 1990 and 1991. For the same years, they were among the top 10 for cancer mortality.

Considering incidence of cancer (as opposed to deaths due to cancer), in the years 1983-90, Deer Lodge County ranked first for breast cancer among Montana's most populous counties. Deer Lodge and Silver Bow were among the top 10 for all other reportable cancers (colo/rectal, pancreatic, lung, prostate and bladder) during those years.

Nationally, the rate of cancer among women in Butte ranked within the top 5 percent of U.S. counties between 1970-79. And in the years between 1949 and 1971, Butte's rate of death from diseases was highest or among the highest

of any of 480 ranked U.S. cities. Statisticians working in Montana's Department of Health and Environmental Sciences privately admit that Butte and Anaconda have consistently ranked high for other poor health outcomes, like miscarriages and fetal deaths.

Perhaps much more insidious are the potential effects of exposure to lead, including reduced IQ, about which Sara Weinstock jokes. While no comprehensive measurement of IQ exists for Montana's children, the state does compile an annual listing, by school district, for incidence of learning disability and cognitive disorder, both classifications under the special education system.

The 1991 Montana Special Education Child Count, an annual report compiled by the state Department of Public Instruction, reveals that for high schools with greater than 400 children enrolled (of which there are 21), Anaconda and Butte rank first and second respectively for rates of learning disorder and cognitive disorder. In both high schools, the rate is nearly twice the rate averaged among the state's 21 largest schools.

Yet the EPA personnel who work on the Clark Fork River sites do not see a threat to human health. "There aren't any obvious public health risks posed by the river and the environs itself," said John Wardell, director of the Montana EPA office. Several of the EPA and Montana Department of Health and Environmental Sciences project managers -

individuals who manage specific portions of the four sites - were in agreement.

"Basically, from the data we've seen, we haven't seen anything from a public health perspective that would cause us to feel that there's a great public health endangerment," said Neil Marsh, who is responsible for cleanup of the mine tailings along the river.

The EPA, however, is not an agency that boasts a proficiency in public health matters among its ranks. In 1990, the American Journal of Public Health reported that of the 750 individuals employed in the EPA's Office of Solid Waste and Emergency Response, which administers the Superfund Program, there were no medical officers, no public health program specialists, nor a single public health educator.

Of the eight EPA employees who are principally responsible for cleaning up Montana's mining wastes, five are engineers, one has a degree in public administration and one has training as a soils hydrologist. Only one has a degree related to health - and that is in occupational safety.

"Exposure isn't our ball game," said project manager, Russ Forba, who is responsible for cleaning up Butte's lead-laden soils. "We don't go out and look to see if there is an impact on people."

Forba is right. It's the ATSDR, not the EPA, that is supposed to determine if there is an impact on people who live on Superfund sites. Yet in this instance, the public health assessments were never done.

The point here is that without adequate health assessments, the follow-up health studies (in-depth analyses of health data within a Superfund community that are provided for under SARA) will never be undertaken by the ATSDR in Butte and Anaconda. That's because the so-called health assessments - the re-labeled documents - give no indication that health studies are warranted.

The Committee on Environmental Epidemiology concluded that health assessments, not risk analysis, are essential in determining whether individuals who come into contact with hazardous wastes sites are in danger of becoming ill. The ATSDR needs at least \$165 million annually to properly conduct health assessments, the committee said. Yet in 1989, the agency spent \$15.9 million on health assessments.

The committee criticized the EPA's reliance on risk analysis and government's failure to adequately fund the ATSDR to gather actual epidemiological data. "A decade after the implementation of Superfund...substantial public health concerns remain and critical information on the distribution of exposures and health affects associated with hazardous wastes sites is still lacking," the committee reported. "The characterization of sites more often

reflects requirements of environmental engineering and site remediation than assessment of public health concerns."

So great is the emphasis on engineering over public health, the committee said, that of the \$4.2 billion annually spent on hazardous waste cleanup, less than 1 percent has gone toward the evaluation of human health.

In the end, risk analysis may be all that is needed to force polluters to pay for cleanup on Superfund sites. But risk analysis alone will never help a victim whose health has been damaged obtain an award in a court of law. As it is, trial lawyers shy away from health damage claims on toxic waste sites because so little information exists to help a victim prove his case. Without actual health data, Moore's "poor sucker who got hit by the train" is no better off now than he was when the Superfund law was passed.



## Chapter Five: Talk and No Action

Georgi Jones, who started out directing the Superfund Implementation Group, now heads the ATSDR's Office of Policy and External Affairs. Since her letter of 1983, which described the health threats in Anaconda, there have been occasional calls for comprehensive evaluation of health and epidemiological data in Butte and Anaconda, calls made on the part of both the ATSDR and the EPA, as well as the Atlantic Richfield Company.

For example, in 1985, a preliminary work plan for evaluating Anaconda included a proposed epidemiological study evaluating the number of lung and skin cancer cases in the community. On review, the Center for Environmental Health (via Georgi Jones in the Superfund Implementation Group) pointed out "a number of weaknesses in the proposed study" that needed to be addressed before the study be undertaken. The study was never completed.

In 1986, Kim Mortensen, an ATSDR health scientist, visited the Clark Fork River sites and reported that "there are a large number of people exposed, or potentially exposed, to high levels of heavy metals." He pointed out that "there has been no official health assessment or scoping of health concerns by ATSDR on the entire site."

Finally, he stated that the EPA is anxious to have the ATSDR involved in the cleanup process.

That same year, Mortensen wrote in another report that "it is clear that people are living in close proximity to the sources of exposure and that potentially toxic levels of heavy metals are spread throughout much of the site. There are multiple exposure pathways by which some individuals may receive significant exposures to heavy metals."

Mortensen called on ATSDR and EPA scientists to discuss sampling needs, possible exposure, and epidemiological studies. In other words, he suggested that the two agencies assess health risks on the Clark Fork River sites.

In 1988, Russ Forba, EPA project manager, wrote the ATSDR and requested that the agency consider a biological testing program "to help assess the impact of lead, arsenic, and other heavy metals on the residents."

But neither the kind of involvement called for by Mortensen, nor the testing requested by Forba ever were undertaken by the ATSDR and the EPA. "The ATSDR doesn't have the manpower to take a detailed look at a site of this size," Forba later said. "We [now] know how overwhelmed the ATSDR is and we look forward to getting whatever information we can from them, but we don't expect a great wealth of new knowledge from them."

Even Roper's promise for a revisit of the 165 sites (made in his response to the 1991 GAO report) didn't mean

that the long overdue health assessments for those sites would actually be forthcoming. Instead, the ATSDR planned a lesser study for each site, a "site review and update", from which a health assessment would follow only if the ATSDR reviewer deemed it necessary.

Anaconda and the Montana Pole site in Butte received their site review and updates during the summer of 1992. Tina Forrester, an ATSDR environmental health scientist, conducted the reviews and reported her findings in the fall of 1992. Nearly ten years after scientists at the Center for Environmental Health expressed their concern over agricultural use of and open public access to the Anaconda site, ten years after Georgi Jones reported that concern in a letter to the EPA, Forrester found ample evidence of trespassing across contaminated soils (ATV tracks, human foot prints, and the like).

"I can't believe people really have access to those areas," Forrester said, adding that she also found evidence of trespass on the Montana Pole site.

"I guess that the most surprising thing was that farmers were grazing cattle in Mill Creek (the area where families had been evacuated)," she said.

Regarding Montana Pole, Forrester wrote, "vagrants...and children wading or swimming in the creek may have contact with site contaminants." Yet she did not recommend a full-blown health assessment. Instead, she

called for two health consultations, one to address citizens' concerns about exposure to the pentachlorophenol and one to address air quality. (A health consultation is a response by the ATSDR to a specific question about a site.)

For Anaconda, Forrester came to a different conclusion. Pointing toward the potential for current and future exposure to arsenic among Anaconda residents, Forrester recommended that an "urgent" public health assessment be undertaken.

To date, the "urgent" health assessment in Anaconda hasn't been started. And in March of 1993, Charlie Coleman, the EPA project manager for Anaconda, could not recall what Forrester's report said or explain why it may affect his cleanup plans. Meanwhile, the ATSDR offers no estimate as to when the health assessment may begin.

## Chapter Six: Unfinished Business

Todd Damrow, state epidemiologist in Montana's Department of Health and Environmental Sciences is only vaguely aware of the health statistics that characterize the Clark Fork River superfund sites. His focus, he said, is communicable disease, not toxic waste.

"We just don't have the resources in our division to support Superfund people," he said. The health problems that are evident in Silver Bow and Deer Lodge Counties could be caused by any number of reasons, he said, not just the mining wastes.

Likewise, Dan Dennehy, director of Butte-Silver Bow County Health Department, is unable to respond to health threats posed by the Superfund site which comprises the breadth of his community. His staff is small, he said, and its focus is on sanitation, air pollution, immunizations and the like.

And while his department is cooperating with an Atlantic Richfield Company-financed program to test blood-lead among Butte's children, Dennehy has neither the time, nor the energy to tackle the ATSDR's failings. He admitted that he isn't even exactly sure what the agency is supposed to do in his community.

The problems faced by these two health officials are no different than those faced by others in similar positions across the United States. After all, per capita production of hazardous waste in the United States is nearly 50,000 pounds annually, a total of about 5.5 billion metric tons. And the Office of Technology Assessment estimates that hazardous waste sites number upwards of 439,000 nationwide, even though only a fraction of those are managed under the Superfund program.

Despite Curtis Moore's decade of work, actual health data was and continues to be ignored in the process of carrying out the Superfund law. The National Research Council's committee on Environmental Epidemiology concluded that in creating the ATSDR, Congress, though perhaps unwittingly, relieved the EPA of its responsibility toward public health on Superfund sites. In screening sites before adding them to Superfund's National Priorities list, "no attempt is made to characterize the potential public health impact" of the sites, the committee reported.

Yet the potential for human exposure to contaminants on hazardous waste sites is tremendous. For National Priorities List sites alone, the ATSDR estimates that more than 40 million people live within four miles of a Superfund site and more than 4 million live as close as one mile from one. Nearly 2 million of these people represent those most

susceptible to illness or injury: women of childbearing age, children and the elderly.

While EPA personnel gather extensive data required for engineering and court battles, at an average cost of \$25 to 30 million per site, the gathering of human health data is kept to a minimum, if it is done at all. The Committee on Environmental Epidemiology concluded that there are only sparse data on the full extent of hazardous waste contamination and even less data on how these toxins have affected human health. The Committee further concluded that the question asking whether human health is being protected on federal Superfund sites could not be answered.

The Clark Fork River sites are just four among some 1,200 that are managed under the Superfund program. But what is going on there, or more appropriately, what isn't going on in the way of health assessments, is representative of the way Superfund sites are managed across the United States.

Stephen Lester believes that the slipshod manner in which the ATSDR conducts itself will have long lasting effects:

"The bureaucrats still look to what was done at all, no matter how incompetent, as the basis for taking action," Lester said. "The fact is that on the record, the decision makers who could act don't have what they need to act. The

official health assessment still says there's no problem here."

What's as important, Lester said, is that "the people who live in those communities don't have any information as to what the health risks are."

Yet what has held the ATSDR back from doing its job for a decade may continue indefinitely. While the EPA is likely to reach cabinet status under the Clinton administration, the ATSDR's status is not likely to be bolstered in the process. In fact, Capitol Hill insiders say that the EPA's proposed budget, scheduled for public hearing in May, includes not a raise, but a 26 percent reduction for the ATSDR.

Like the thousands who are potentially exposed to hazardous waste elsewhere, the citizens of Butte and Anaconda remain living on a contaminated land, unaware of any damage to their health that may be occurring. Perhaps their prayers to Our Lady of the Rockies will be sufficient to protect them. One way or the other, they'll likely never know the difference.



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The following record is in no way a complete list of all sources I consulted for this manuscript. I list here only the materials directly related to the manuscript with the intention of portraying the variety of individuals I interviewed and references I read to complete the story.

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