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November 15, 1971

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

Steve J. Gadler, P.E.
2120 Carter Avenue
St. Paul, Minnesota 55108

Dear Mr. Gadler:

This is an answer to your letter of October 26, 1971, inviting me "to testify as a scientist for the Mapleton Intervenors in the matter of the USAEC Licensing Board Hearings on the Consumer Power application to construct an atomic plant at Midland, Michigan".

Your letter goes on to say that although I would be "an important witness", you cannot guarantee that if I prepared my testimony, I "would be allowed to present it or be allowed to testify".

It is precisely for this reason and this reason alone, that I must refuse your invitation to testify.

I accepted such an invitation once before but I will never do so again. Furthermore, I am surprised that any witness who must travel any distance, would accept such an invitation if he knew the facts: Here they are:

According to AEC Rules, my testimony (on behalf of the Intervenors in the case of the proposed Shoreham station of the Long Island Lighting Company in New York) was prepared in written form and was in the AEC's hands months in advance of my scheduled appearance. Furthermore I was informed that my testimony would be restricted to what I had written, and at my appearance I would not be allowed to add to it or elaborate upon it in any way, once it had been submitted to the AEC in written form months before.

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Now the AEC has a blatantly self-serving rule. It will not rule upon the admissibility of testimony unless the witness is present

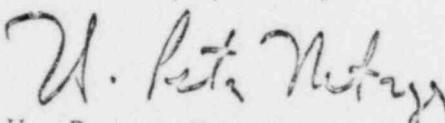
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at the time of ruling. This is true despite the fact that during the months the AEC has any written testimony in hand, there can be (and was in my case) many opportunities (hearing days, when representatives of all sides are present) to rule upon the admissibility of such testimony. Now on the surface this seems to be a good idea: a safeguard so that the witness' testimony is not judged in his absence, so that he may confront those who seek to disallow his testimony and rebut their arguments. But this isn't so. The witness must be present all right, but during the deliberations on admissibility, he must stand mute and therefore cannot defend himself. Therefore, no legitimate purpose is served by requiring the witness to be present at that time. This is what occurred in my case.

But there is a non-legitimate purpose in requiring the witness to be present, though mute. It is to accomplish exactly what the AEC has accomplished in my case: to discourage a witness from testifying who must travel across the country, for what witness would do so if he knows in advance that his testimony may be disallowed at the pleasure of the AEC ruling board. If his testimony is favorable to the AEC, he can reasonably expect no worries at all; if it is damaging to the AEC, he now knows that the chances of being heard are small since it is the AEC board itself which makes the ruling.

Techniques such as this, not only violate due process (to which the AEC is not bound) but fair play, common sense and even enlightened self interest as well. Remarkably, after freely indulging in this nefarious sham, the AEC still wonders why it is being "persecuted" by the public.

Sincerely yours,


H. Peter Metzger

HPM:1h

cc: Chairman Schlesinger
USAEC

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'Dear Sir: Your House Is Built On Radioactive Uranium Waste'

By H. PETER METZGER

(SUGGESTED LETTER TO OWNERS OF PROPERTIES WHERE RADIATION LEVELS EXCEED THE SURGEON GENERAL'S GUIDELINES)

Dear

An official report on our survey of your property for the presence of uranium mill tailings is enclosed.

You will note that our study has confirmed the presence of uranium tailings on your property and that the radiation exposure rate is higher than the level at which the U.S. Surgeon General feels corrective action is suggested.

We wish to point out to you, in all honesty, that there is little precise scientific information about the long-term health effect of low-level radiation, such as exists in your home. We strongly recommend, however, that you make every effort to lower the radiation exposure level in your home by removing the uranium tailings from your property.

GRAND JUNCTION, Colo.

THE letter above is a draft of a warning that the Colorado State Department of Health will send sometime within the next few weeks to 5,000 homeowners in the city of Grand Junction. The danger comes from a gray, sand-like material, a waste product from a downtown uranium mill that is no longer operating, which was carted away in large quantities as a construction fill for foundations. Only recently have the people living over those foundations begun to learn the dimensions of the threat that rises from the earth beneath their feet.

In order to make comprehensible the doses of radiation that are involved, the health department has calculated that the lungs of the occupants in 10 per cent of those 5,000 houses are known to have been exposed to the equivalent of more than 553 chest X-rays per year.

In May, Health Department letters went out to the Grand Junction city manager and the Chamber of Commerce recommending that real estate sales be restricted until it can be determined that the property is free of tailings, and in July, the Board of County Commissioners decreed that building permits would be granted only "with the provision that if tailings are present, they be removed prior to erection of buildings."

Another part of the state's letter to the homeowners says: "No public funds are presently available to pay the cost of radon removal [from existing buildings]. We are exerting every effort to try to get Federal funds set aside for this purpose to relieve the burden this unfortunate situation has placed on Grand Junction residents." An engineering study, prepared for the Atomic Energy Commission (A.E.C.) concluded that the cost of removing the tailings from beneath the homes in Grand

Junction would be very high. The A.E.C. determined in the case of one home valued at \$32,000 that more than \$15,000 worth of work would be required. And the 5,000 homes in Grand Junction are not the whole of the affair. Many homes in Durango, another uranium-mill town in Colorado, have already been shown to have been built on tailings. Preliminary measurements indicate that 14 more towns in the state could have the same problem and estimates for repairing all of the affected homes in Colorado run as high as \$20-million.

Like Grand Junction and Durango, Salt Lake City, Utah, also has a large tailings pile inside its boundaries. Despite assurances from state officials there that no tailings were used for construction purposes anywhere in Utah, two years ago a newsman found many homes and other buildings built on the radioactive material. Thousands of other homes in the West may be similarly threatened. Wherever there is a big pile of fine, sandy uranium tailings that are free for the taking, it seems, people will find it and use it, before going out to buy ordinary sand. But those who do, get more than they bargained for.

THE tailings are one of several kinds of radioactive waste left over from our country's quest for more raw material for atomic bombs. The gray sand is what remains after the rock-like *ore* is crushed at the mill and the uranium removed. Since plutonium, a man-made element produced in a nuclear reactor, is now the preferred fuel for nuclear weapons, the Government is no longer purchasing uranium from the mills. In fact, the A.E.C. has just announced that in 1974 it will begin selling uranium from its stockpiles for industrial purposes. But private companies continue to mine and mill

uranium for use, after enrichment, in nuclear-power reactors. This means that the piles of tailings are still growing, although much less uranium is currently being produced than during the mining boom of the nineteen-fifties.

The mounds of radioactive sand—more than 90 million tons of it in all—are found at some 30 mills scattered over nine Western states: New Mexico, Wyoming, Colorado, Utah, Arizona, Oregon, Washington, South Dakota and Texas.

Piled outside the mills, the tailings were freely available for years and the Atomic Energy Commission declined to prevent people from carting them away. Even today there are ineffective controls. Only Colorado licenses tailings piles and restricts public access to them, although New York Times correspondent Anthony Ripley has written about Grand Junction: "... anyone with a truck or car can drive past the single keep-out sign on the road to the city sewage treatment plant and drive onto the pile of tailings. There are

no fences. There are no radiation signs." Similarly, I have driven onto Union Carbide's pile at Rifle, Colo.

IN the first years of uranium production, only the dangers from the ore in the mines were recognized. The ore veins contain radium as well as uranium. Radium slowly decays into a radioactive gas called radon, which itself rapidly changes into a series of highly radioactive solid particles that remain suspended in the air called "radon daughters." When inhaled, the particles adhere to the inside of the lungs and are responsible for "mountain sickness," as the Germans called the disease a hundred years ago—just before it was recognized as lung cancer. A

thousand European miners had already died of it before the A.E.C. began its massive uranium procurement program in 1948.

Predictably then, our miners suffered the same fate. As Dr. Brian MacMahon, chairman of the advisory committee on this subject to the National Academy of Sciences, recently observed: "The epidemic of lung cancer now in progress among American uranium miners could readily have been—and indeed was—predicted on the basis of past experience in other parts of the world." So far, several hundred have died of the disease and more deaths are expected. In 1969, Charles C. Johnson Jr. of the Department of Health, Education and Welfare reported that "of the 6,000 men who have been uranium miners, an estimated 600 to 1,100 will be dead of lung cancer within the next 20 years because of radiation exposure on the job."

When the uranium is extracted from its ore, all the radium remains behind in the tailings. So with regard to the deadly radon daughters, the tailings are every bit as dangerous as the ore itself.

The tailings are safe as fill under roads and airport runways, which are in the open and have plenty of ventilation, but to build a home (or any other enclosure) over the radioactive material is another story; it is almost to duplicate the situation down in a uranium mine. The radium in the fill produces radon gas which seeps up through the cellar cement slab and collects inside the house. The radon is continuously changing into radon-daughter particles, which in the room remain suspended in the air; just as they do in the mines. As the occupants of the homes breathe, radon daughters accumulate in their lungs, greatly increasing the risk of lung cancer.

But this is not the only hazard. Radon daughters failing to get through the cellar slab still emit gamma rays, which also can penetrate concrete and are particularly strong near the floors, where young children spend much of their time. As with the miners, radiation damage takes decades to show itself in adults, but children, being far more susceptible to atomic radiation, are already beginning to exhibit disturbing symptoms.

The University of Colorado Medical Center in Denver was alerted this year by Dr. Robert M. Ross Jr., a pediatrician and past president of the Mesa County Medical Association, who reported that there seemed to be too many cancers and birth defects among his young patients in Grand Junction. The university applied to the A.E.C. for funds to study chromosomal breakups, an early harbinger of radiation damage, among children in the radon homes. Last March, at a meeting with Gov. John Love and state medical and health people,

H. PETER METZGER, who holds a doctorate in biochemistry, is president of the Colorado Committee for Environmental Information. He is compiling a book on the atomic-energy bureaucracy.

A.E.C. technicians, minimizing the hazard of indoor radon, indicated that a chromosomal study in Grand Junction would have "no validity." A.E.C. Chairman Glenn Seaborg turned down the grant himself in a letter to Love, but the Governor obtained other funds and the study began in July.

Dr. Herbert Lubs, one of the researchers, comments on his preliminary results: "There already appear to be too many chromosome breaks in cells from the [umbilical] cord-blood of the babies." He also pointed out that recent health records in Grand Junction suggest a higher incidence of mongolism in the newborn there. "It's almost three times what you'd expect," he said.

IN drawing up the rules for the nuclear era, the A.E.C.

has pretty much been able to define its own regulatory powers. From the beginning, it has concentrated on what it considers major radiation hazards, including the source of the fuel (uranium or thorium), the most intense byproducts of fission (like strontium 90) and "special nuclear material" (like plutonium). Under its regulations, radium—such as is contained in the tailings—has never been on the list of radioactive wastes that the agency controls, although its broad legal mandate to protect the public from unsafe radiation could be interpreted as covering this material. Moreover, the small amounts of uranium and thorium left in the tailings are below the level that the A.E.C. defines as "important" (0.05 per cent).

The tailings problem had two possible solutions at the start: A Bureau of Mines study showed that the radium could be removed with vermiculite, in a common leaching process. But the leaching would have to be done at the mill, during the refining process, to be economical. At this late date it would be too costly to haul the piles back to the mill for processing. The same goes for the alternative of transporting the tailings back to the uranium mines: The method would be economically feasible only during the milling of the ore, when trucks taking the ore to the mills could bring back the tailings to the mine on the return trip.

What the mills did in the first 10 years of the atomic energy program, it was discovered, was to discharge tailings and radioactive waste liquids into the nearest waterways. The A.E.C. belatedly asked the mills to keep the amount of radioactive material dumped into rivers and streams within permissible limits, but, rather than having to pay for the necessary safety measures, the commission did nothing to enforce its strictures.

THE A.E.C. knew what a burden the tailings piles would become because it had one of its own, in Monticello, Idaho. As a demonstration project, the agency flattened the pile, covered it with topsoil and graced it over at a cost of more than \$300,000; even this ambitious project was temporary, described by the Federal Water Pollution Control Agency as only adequate for a period of 20 years or so.

Considering the cost, the states did not expect that the other piles would be so covered by the owners voluntarily—a job the A.E.C. once estimated would cost more than \$10 million but which would probably cost five times that

today. Moreover, since the best available treatment was good only for a short time, it became clear that perpetual maintenance would be required, because the piles would continue to be dangerously radioactive for an incredible 10,000 years. State officials were aware that unless responsibility for the tailings was assigned quickly, the contractors might try legal maneuvers to avoid the task themselves and the states would inherit the entire lot by default.

Through its multi-licensing program, the A.E.C. still had control over all the piles and could under law require the mills to cover them in the same manner as the Monticello pile. The agency promised the states in 1964 that no mill license would be permitted to terminate without a complete review of the tailings problem.

Then, in what was widely regarded as a complete about-face two years later, the A.E.C. decided that when a mill owner's license terminated, further control of tailings was not required. Joseph F. Hennessy, the A.E.C.'s chief legal counsel at the time, told a Senate subcommittee: "There is a limitation . . . [in the Atomic Energy Act] that exempts . . . any quantities of uranium . . . considered unimportant by the commission . . . so our present posture is that the concentration of uranium in these waste piles is [too low] to impose any restrictions." (Emphasis added.)

The effect of this action was to remove the uranium mill tailings from any control at all. With the support of the U.S. Public Health Service, the State of Colorado formally protested, but it did no good. The A.E.C., without outside consultation and without publishing any supportive data, concluded that the uranium tailings piles "present no hazard to the environment, either short term or long term."

And so, in 1956, some 90-million tons of radioactive sand were suddenly no longer the responsibility of the A.E.C. With the exception of Colorado, where state control took over immediately, the piles would just have to wait until they caused some real trouble before anyone else would step in with control measures. And by that time of course, it would be too late.

The A.E.C.'s summary of what was expected to be its final statement on the tailings problem said: "We find it difficult to conceive of any mechanism whereby the radioactive material which is now so widely dispersed, could become so concentrated as to exceed current applicable standards for protection against radiation." The statement is remarkable because at the very moment just such concentrations were being created.

Here is how the problem came to general public attention: On a routine inspection early in 1956, Robert D. Sick of the Colorado Department of Health and Robert N. Snelling of the U.S. Public Health Service were in Grand Junction when they noticed trucks unloading fill into an excavation. What caught their eye was that the material was not ordinary sand; it was uranium tailings, which can be distinguished from sand by their finer grain and gray shade. After questioning the truck drivers, they determined that for a dozen years much of the sandy fill used in the area was uranium tailings, taken from the Climax Uranium Company mill in downtown Grand Junction.



The inspecting officials realized not only that uranium tailings beneath a home can duplicate conditions in a uranium mine, but that the problem could even be worse than it was for the miners: more people would

be exposed for longer periods and the victims would be of all age groups, including those most sensitive to atomic radiation—young children and the unborn.

Looking back, it seems hard to understand how the A.E.C. could have permitted the whole thing to happen in the first place. The uranium miners' tragedy was unfolding and the danger of radiation-induced lung cancer was a much discussed subject in the mill towns of the West. It was common knowledge in the mill communities that tailings were routinely used for fill under homes, and local health officials were concerned.

In 1963, eight years before it was discovered that hundreds of homes in Durango, were built on the tailings, Dr. Arthur Warner, the county medical director, wrote to Dr. Donald L. Walker, then the A.E.C.'s regional director of the division of compliance. Dr. Warner reported that the Vanadium Corporation of America's tailings pile, towering 200 feet over the center of town, caused "serious concern within this community." Dr. Warner asked the A.E.C. for information concerning the use of the tailings in the construction of small buildings. Today, Dr. Walker admits he did not reply in writing but instead mailed to Warner a copy of an A.E.C. letter on the subject that was supposedly sent in 1961 to the nine state health departments (which, as we shall see, have no record of it).

The next year, Page Edwards, manager of that Durango mill, also asked the A.E.C. for advice about the use of tailings for construction purposes. The A.E.C.'s reply was snappy: "Tailings are not subject to the A.E.C. licensing requirements."

By then there had been public discussions of "wide-

spread use of tailings in construction materials, for sand traps on golf courses and for children's sandboxes," to quote one official's report of a Public Health Service meeting held in Cincinnati in 1964—which was attended by Dr. Walker and other A.E.C. representatives.

BY the time health officials had identified the indoor radon problem, it became very difficult to get cooperation, in many ways the A.E.C. attempted to prevent the subject from becoming a public issue.

Since children are the most sensitive to radiation, it was important to measure radioactivity in the schools, most of which had been built in recent years. Sick and Snelling, along with Dr. Cecil Reinstein, the county health officer, met with the Superintendent of Schools in Grand Junction in 1960 to explain the problem and get permission to make measurements in the schools.

Sick remembers that the superintendent said he would have to consult with his "scientific adviser" in such matters, James Westbrook, who was a member of the school

board and also an assistant manager of the A.E.C.'s Grand Junction operations office. Westbrook and another official arrived later and the health officers repeated their request to set out monitoring equipment; it was turned down.

Westbrook says now that he felt the technique proposed for measuring the radioactivity in the schools was inadequate. But even so, it could hardly have failed to give some idea of the extent of the problem. Today the Mesa County school board knows that 15 of its schools have been built on tailings and that in at least one classroom the airborne radioactivity exceeds the Federal limit permitted in uranium mines.

ON an official level as well, the A.E.C. hindered efforts to achieve a solution. In 1967, the Colorado State Department of Public Health and the Southwestern Radiological Health Laboratories requested funds from the U.S. Public Health Service for support to carry out surveys to define the extent and seriousness of the indoor radon problem. The A.E.C., officially this time, managed to review the grant request and, on its recommendation, the U.S. Public Health Service turned down the state's request. In its review letter, the A.E.C.'s advice was based on the assertion that the high levels of radon then found in the homes by the health department "can be expected from natural radioactivity. Therefore," its letter concluded, "a further sampling program . . . does not seem warranted."

In order to make that claim believable, the A.E.C. began a research project entitled, "Indoor Radon Daughters and Radiation Measurements in East Tennessee and Central Florida." It was known that naturally high levels of radium exist in the surface soils in central Florida and the agency expected to find there a duplication of the measurements made by the Colorado State Department of Health in Grand Junction. In this way the A.E.C. sought to put Colorado's problem in "proper perspective."

As it turned out, the highest level in Florida, as reported by the A.E.C., was only 1 per cent of the highest measurements made by Colorado authorities in Grand Junction. So the A.E.C. report was put quietly to sleep with the stamp on it: "NOTICE, THIS REPORT IS FOR INTERNAL USE ONLY. IT MAY NOT BE PUBLISHED."

At the end of 1969, the Colorado Health Department discovered 10 old homes in the town of Uravan that were built on radium diggings in the nineteen-twenties. Radon levels in seven of those homes actually exceeded the level allowed in uranium mines. Robert Catin, an A.E.C. representative sent to Colorado to explain the indoor radon problem in February, 1970, said on Denver television that "the use of mine tailings for construction purposes . . . precludes the atomic energy program." While his statement is true, the impression it creates is not: the 10 homes built before there was an A.E.C. can hardly be compared with the many thousands of homes built elsewhere on tailings freely removed from A.E.C.-licensed mills—a problem which by this time was known to the commission.

In a 1970 report entitled "A.E.C. Responsibilities Regarding the Mining and Milling of Uranium," major emphasis was placed on a commission claim that it had notified all the state health departments about the problem in time. The commission said that in early 1961 it had sent each department a letter discussing "the A.E.C.'s licensing authority over uranium mills and the health and safety considerations relative to the [selling or giving away] of sand tailings." A copy of the "1961 letter" was made a part of this document and given wide circulation. It said in part: ". . . the radium content of these tailings may be such as to warrant control by appropriate state authorities."

If the letter had in fact been sent, it might vindicate to some extent the A.E.C.'s complete silence on the dangers it had created in its quest for raw materials. But nobody could remember the letter. Not one of the radiation health officers of the 50 states has a record of this correspondence.

IN January, 1970, Colorado requested Federal help to determine the dangers of the radioactivity that had been measured in the Grand Junction homes. Six months later, the U.S. Surgeon General issued health guidelines for airborne radioactivity inside homes, establishing three categories based on radon levels: (1) No action required, (2) remedial action suggested, and (3) remedial action indicated. The A.E.C. in a "staff analysis" pointed out that the Surgeon General's recommendations "are difficult to im-

plement (because) they do not identify the remedial action contemplated."

Later in the year, an inter-agency steering committee, composed of representatives of the Colorado Department of Public Health, the U.S. Public Health Service, the A.E.C. and the newly created Environmental Protection Agency (E.P.A.), was formed to decide what the remedy was to be. On the recommendation of their own medical advisory group, they voted last month "to recommend complete removal of all tailings within 10 feet of a habitable structure." This was a typical position for public health people: If a danger is present, remove it; never choose a temporary solution if a permanent one exists.

Predictably, the A.E.C. voted against the motion, but Colorado was encouraged to see that the E.P.A. representatives supported the motion, for it was widely suspected that the agency would back the A.E.C. This was because most members of the E.P.A.'s office of radiation programs were former A.E.C. people whose functions had been transferred to the new agency as part of President Nixon's abortive effort to dilute the A.E.C.'s regulatory powers. But the suspicions of A.E.C. influence revived when Dr. Paul Tompkins, director of the division, told *The Rocky Mountain News* that the vote did not represent E.P.A.'s real position. "We're not advocating that the tailings come out no matter how small the level or how expensive the cost," said Tompkins.

The battle lines are already drawn on the issue of who will pay the \$20-million bill for the removal job. The A.E.C. still stands by the 1966 opinion of its legal counsel, Joseph F. Hennessy, that tailings are not under the agency's jurisdiction. Perhaps the most curious attitude is that of U.S. Representative Wayne N. Aspinall, Congressman from the Grand Junction area for more than 20 years and chairman of the subcommittee on raw materials of the Joint Committee on Atomic Energy. When it raised the question of financial responsibility last month, *The Daily Sentinel* of Grand Junction quoted the Congressman as saying: "The costs of removal are too great and government treasuries are too limited. The sooner we get this into our heads, the better off we'll be."

An opposing view was expressed by Glenn E. Keller Jr., the president of the State Board of Health: "I should think Mr. Aspinall's first responsibility shouldn't be to the A.E.C. but to the homeowners in Grand Junction. I submit that the Federal Government has exercised extreme irresponsibility in the situation and Mr. Aspinall is sticking his head in the sand when he disclaims that." Governor Love told a press conference later that month, "I feel the responsibility does rest with the Federal Government, more specifically the A.E.C."

THE problems of Grand Junction bear importantly on a vital issue for our nation today: radioactive-waste disposal. We have been engaged in two nuclear efforts: the production of a vast atomic arsenal and the development of nuclear-reactor electric generating stations. Both produce prodigious quantities of nuclear waste, but the projected amount from the nuclear-reactor industry will dwarf that already produced from the weapons program.

Accordingly, a plan has been approved for permanent disposal of so-called "high-level" nuclear wastes from power plants—which are much more dangerous than the tailings—in salt beds 1,000 feet below the ground in Lyons, Kan., a momentous decision about which Dr. Alvin M. Weinberg, director of the A.E.C.'s Oak Ridge National Laboratory, said this year:

"Our decision to go to salt for permanent high-level disposal is one of the most far-reaching decisions we—or, for that matter, any technologists—have ever made. These wastes can be hazardous for up to a million years. We must therefore be as certain as one can possibly be of anything that the wastes, once sequestered in the salt, can, under no conceivable circumstances, come in contact with the biosphere."

Salt deposits are one of the earth's tightest geological formations. The mineral's compressed strength makes it, like concrete, an excellent container for radiation. Present plans call for lowering solidified, hot radioactive wastes packed in 10-foot-long stainless-steel cylinders through a shaft to the floor of the mine. The cylinders will be covered with salt, which will eat through the steel and at the same time melt into a plastic-like substance that will eventually seal the wastes into their "graves."

In a hurry to get moving, the A.E.C. asked the Joint Committee on Atomic Energy in March to approve a \$25-million appropriation to begin only three months later. So sure was the commission that Lyons was the right place that the director of the division of reactor development told the committee that further research "will not be particularly productive." But the agency did not have the free hand it had in Colorado 20 years ago. Democratic Gov. Robert B. Docking and Republican Congressman Joe Skubitz were openly opposed, but, more important, so was the Kansas Geological Survey.

The Kansas Geological Survey had been very critical of the A.E.C.'s haste, pointing out that not enough is known about the underground water at the Lyons site. Water must be kept away from the salt beds during the million or so years of concern, for if any enters the cavern, it would prevent tight sealing of the radioactive wastes. Contaminated and heated by the radioactive material, the water might percolate into nearby mine shafts and underground water supplies, or rise as vapor through the main shaft and out the entrance of the salt cavern. While salt deposits are the least likely place to find a reserve of natural water, a problem may arise from hydraulic mining operations at an American Salt Company mine near the proposed dump. The company wrote to the A.E.C. about the problem last summer. A spokesman told *The Denver Post* that the latter "expressed concern about the presence of water" and that his company "had been injecting water into the formation for 50 years; as we

remove the salt, the water replaces the salt."

An A.E.C. report on the problem revealed that tunnels of the American Salt Company's mine come as close as 500 yards to the A.E.C. proposed dump. Also, the report said: "In the course of drilling small holes, water started leaking into the mine [because] one of the many gas or oil bore holes in the area had been intersected." Dr. William W. Hamblton, the director of the Kansas Geological Survey, remarked: "We felt the Lyons site increasingly looked like a leaky sieve. I think they [the A.E.C.] are realizing that too."

Although the A.E.C. has yet to concede the point, Representative Skubitz said this month that "the Lyons site is dead as a dodo for waste burial."

And so after 15 years and \$100-million worth of studies and experiments, the A.E.C., within the short span of about seven months, has been persuaded to begin looking for another place. What had happened was simple enough: the A.E.C. plan was made public and was therefore subjected to outside criticism and open discussion. Flaws in the scheme were discovered and they could not be made to go away: something had to give.

SO the problem has not been solved. David Lilienthal, the first chairman of the A.E.C. and a man who believes that somewhere along the way the agency strayed from its original aim of developing nuclear power, feels that waste has been badly neglected by the A.E.C. The reason, he says, is that it is

just not as glamorous as other projects that the A.E.C. has gotten involved in, like the abortive scheme for a billion-and-a-half-dollar nuclear airplane. In a recent interview, Lilienthal said: "Can't we find some young people with new ideas to take care of the waste problem? A dozen first-rate people could solve the problem once and for all and get us down to the real business of supplying power for America's future."

A plausible alternative to salt-bed disposal has been put forth by scientists at the A.E.C.'s Lawrence Livermore Laboratory in California, who have proposed to store the waste in a cavern created by a nuclear explosion detonated 6,000 feet underground. Unlike the Kansas mine, which sits atop a water-bearing layer in the earth, this "Plowshare Method" would provide a far deeper cavern that would be well below available water-bearing rocks. Perhaps more important, the new method would avoid the hazards of the single-dump concept—the Kansas plan calls for transportation of hot wastes from all over the country to Lyons. Under the Plowshare plan, one cavern near each of three nuclear fuel-reprocessing plants could contain all the electric industry's nuclear waste until the turn of the century.

But the A.E.C. seems to remain committed to a salt-mine dump. Floyd Cutler of the Oak Ridge National Laboratory, recently told the Joint Committee on Atomic Energy: "If we stop on the salt, then, by golly, we have got to start over on a 20-year program with gypsum beds, or basalt, or something else." Thus, the commission is searching for alternative sites to Lyons. Just as in the case of the mill tailings, economic considerations seem to be overriding sound technical judgment.

"Dear Sir: Your House Is Built On Radioactive Uranium Waste"

By H. Peter Moltzger



But now winds are beginning to blow through the A.E.C. The chairman who took over in August, Dr. James R. Schlesinger, has warned the atomic-energy industry that the commission's function will change. "From its inception," Schlesinger admitted in his first policy address this month, "the A.E.C. has fostered and protected the nuclear industry." In the future, he said, the commission's role would be a more limited one—"primarily to perform as a referee serving the public interest."

Even if Schlesinger succeeds in transforming the agency, though, the A.E.C. cannot avoid responsibility for past errors, like the tailing

mess. At the very least, the commission should press for funds to remove the radioactive material from building foundations. While there does not seem to be any feasible method of disposing of the piles, the commission could seek legislation to guarantee that they will be flattened, covered and pushed away from streams—and the public kept out.

SCHLESINGER'S concept of the commission does promise to reverse its course, for the better. Nothing less can assure the nation that its atomic managers will responsibly handle the deadly nuclear trash of the future.

If the Great Pyramid at Giza in Egypt had been a radioactive waste depository, if uranium tailings had been interred in the structure when it was built, about 15 per cent of the radium contained in those tailings would still be dangerous today. If that material were plutonium (the nastiest waste of them all), natural decay in almost 5,000 years would hardly have made a dent: 90 per cent of the radioactivity originally present would be with us now.

Our civilization in this nuclear age has a staggering responsibility to the future. The costs to coming generations of our mistakes are almost beyond the power to imagine. Our technologists must be nothing less than infallible. Accordingly, everything must be done to increase our chances of being right when we finally decide what to do. As a start, we can derive some humility from the fact that only five years ago our technologists could not conceive of how safety could turn into danger in Grand Junction, Colo. ■

OFFICE OF THE CHAIRMAN

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~~BLOCH~~
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RICE

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TO: *Dr*

file

Capt Morris

REPLY FOR _____ SIGNATURE

Sharon Smiley

REPLY FOR SIGNATURE BY: GM _____ DR _____
(Please send two copies of replies to significant communications to the Office of the Chairman)

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FOR APPROPRIATE HANDLING

FOR INFORMATION: GM _____ DR Commissioners

REMARKS:

Julius H. Rubin
For the Chairman

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