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TYPE OF RECORD: PERMANENT

CATEGORY OF RECORD: **UMTRA (REPORT)**

NAME OF CONTRACTOR: STANLEY R. ANDERSON, MAYOR OF GRAND JUNCTION - THE SUBCOMMITTEE OF RAW MATERIAL OF THE JOINT COMMITTEE ON ATOMIC ENERGY

SUBJECT/PROJECT: THE USE OF URANIUM MILL TAILINGS FOR CONSTRUCTION PURPOSES IN GRAND JUNCTION

CITY DEPARTMENT: PUBLIC WORKS

YEAR: 1971

EXPIRATION DATE: NONE

DESTRUCTION DATE: NONE

STATEMENT BY: Stanley R. Anderson

Mayor of the City of Grand Junction, Colorado

BEFORE: The Subcommittee of Raw Material of the Joint Committee on Atomic Energy

REGARDING: The use of uranium mill tailings for construction purposes in Grand Junction, Colorado

DATE: October 29, 1971

I appreciate the invitation from the Chairman of the Subcommittee of Raw Materials to present testimony "on the views of the people of Grand Junction with respect to this issue...its present and potential impact, and any other information which would be helpful to the committee". Because this was the issue submitted for this testimony, I'll do my very best to address my remarks specifically to these questions.

Any discussion of the views of the people will necessarily be limited. Of the approximately 22,000 people in Grand Junction and approximately 55,000 people in Mesa County, there are many divergent opinions. In the past several months I have asked the opinion of many of them concerning the use of tailings on construction sites. Many of them have expressed the opinion that all of this publicity we are getting in the National News Media is unwarranted, unjustified, and harmful to the community. There have been some articles written which were harmful...if not in absolute statement...they were harmful by innuendo. We have attached to this statement a number of articles which have appeared in newspapers and magazines across the country.

If we could for a moment direct your attention to page 2 of the attached articles, I think you could draw your own conclusion of whether these were facts or innuendos reported in the article. Generally, walls don't glow in the dark when they are bombarded by gamma radiation, nor do the Grand Junction girls glow in the dark, as insinuated in the article, nor do the insides of windows sweat in the winter as a result of radiation.

This type of reporting leaves many of the people of Grand Junction thoroughly disgusted. Many articles have appeared since then which have brought the Grand Junction area to the attention of the nationwide reader. Some articles were questioning the use of mill tailings in construction, some questioned whether there was chromosomal damage in young children, some questioned whether there was a relationship between cancer and gamma radiation or radon gas. One article written by the former Secretary of the Interior, Stuart Udall, even goes so far as to advise the immediate removal of tailings and that the cost be borne by the Federal Government.

The attitude of the people through this has been one of wondering, because no concrete answers ever come to them from any of these articles. The people were quietly wondering what was happening, what was going to be the result of the house to house survey, what was the result going to be of the research. Up to this present time there have been few directly traceable results of all of these activities.

However, because of the many, many articles in National Media which have resulted in letters from friends and family asking about our local health situation, people are now becoming concerned. I feel there is definitely a change in attitudes coming about now. There are still numbers of people who have no concern...but others are beginning to express opinions.

A program on the local T V station, KREX-TV, with Dr. Alan Basinger, Frank McGinley, G. W. Franz,III and Pat Gormley aroused 65 calls to the station asking questions. Most of these questions were about the health hazards. This program was at 10:30 P.M. on a Wednesday night.

I can see evidence from another source, too, that the attitudes are changing. We have enclosed copies of some letters which have expressed an attitude of concern. One person moved to Grand Junction with the idea of retiring. After he had been exposed to the immediate problems of radon gas and radiation hazards to health, he withdrew his savings, packed his belongings, and moved on to another area. There is a letter in the addendum which indicates that this problem also was instrumental in the decision of a doctor not moving to Grand Junction.

With this background, then I would like to draw attention to the present impact upon the people of Grand Junction and surrounding area. I mentioned that the attitudes are changing at this point in time. We have enclosed for your information, copies of some letters from Realtors who have encountered a reluctance on the part of buyers to purchase homes where tailings have been used in construction. Until recently, no one has been concerned about this problem...only recently the people buying houses have been requiring a letter from the State Health Department to indicate whether the levels of radiation are a hazard. However, when they get the letter, there still is no indication of whether there is danger in the readings, only whether there is a presence of tailings or not.

After a time, this will lead to frustration on the part of property owners. As we proceed into the next few months, we will begin to see many properties go unsold because there are tailings under the house. We've already seen that three very nice homes have not sold, in fact, the contracts were recinded because of the presence of tailings. This, of course, creates a real problem for the seller and will result in losses to owners. If a $30,000 home, as an example, has a cost of $10,000 to remove the tailings, the value today will be $20,000, or perhaps less. What equity does an owner have then? What frustrations when a large number of sellers have houses unsold because the buying public is not certain of the danger, or lack of danger, involved in buying the housings with tailings! What frustration for those people who own their homes, but have a set income which will not allow them to repair the damage involved by removing the tailings.

If these homes lose value by the change in attitudes of the buying public, we will experience a loss on Real Estate valued of the same magnitude or more than the cost of removing the tailings...estimated to be $12,000,000 to $14,000,000. This loss in value is comparable to the loss involved when storms have stuck the coasts of our nation and destroyed millions of dollars of property.

This is the potential impact to our area. Real estate values will be the first to suffer because this is a direct result of the problem, fear of the unknown danger will have the effect of limiting or stopping sales of real estate where tailings have been used.

Secondly, until some firm answers are given and definite standards applied, indicating that there is no danger if radiation is limited within certain perimeters, we will probably see a stoppage of growth in population because of the fear of the unknown...the unknown danger of radiation.

Thirdly, we could expect that unless the federal government allows relief to the problem, the taxes on real estate will be forced so high to provide funds to eliminate the problem, that people will not be able to afford to live in Grand Junction or Mesa County.

-more-

The door to door investigation of homes in the Grand Junction area, with no conclusive determination of the results of the investigation or the seriousness of the hazard, is creating a general feeling of insecurity. The inability to obtain a clear medical opinion as to the extent of the danger to varying age groups is causing concern about living in specific homes, and, in some instances, discouraging living in the community altogether. There is no definite opinion that the medical profession can or will give, and yet the publicity, and the assumptions derived from the publicity, continually confuse the public.

The primary concern of the community is that there is no foreseeable resolution of the problem. As long as the study or studies with periodic publicity, possible hazards will govern many personal, business, and local governmental decisions. With divergent voices being expressed publicity by the various agencies, the entire process can only have a negative affect on all the aspects mentioned previously.

The size of the economic problem of removing the tailings entirely...a cost estimated at approximately 15% of the assessed valuation of Mesa County, is far too great for a community to absorb.

The indecision may be suitable in a scientific research project, but it is intolerable to individuals living in such laboratory conditions.

We must have answers soon...answers to questions such as:

1. What absolute standards are adopted to indicate the risk of living in surroundings where tailings have been used?
2. How quickly must the project of removing the tailings be instituted to eliminate hazards to health?
3. How will such an enormous project be funded?

If it is necessary to accomplish this it will be essential that the Federal Government take the responsibility of removing the tailings.

These are definite questions, which beg answers in order that we can get on with the business of providing a community where people can live prosperous and happy lives. I think this is a realistic goal.

America's Most Radioactive City

GRAND JUNCTION, COLORADO: AMERICA'S MOST RADIOACTIVE CITY

Their houses were built on radioactive sand. Nobody knows how dangerous it is to live there, and very few people seem to care

On the surface, Grand Junction, Colorado, is like any other well-run American city of 58,000 people. It has tree-lined streets, well-kept houses, good schools, an excellent hospital.

There is not much crime, not much illness, not much unemployment, not much air pollution. A fine place to live and raise children, except for this: Grand Junction is America's most radioactive city.

About a third of its people are exposed to an undetermined level of slow-acting, radioactive radon gas every day of their lives—in schools, homes, churches, supermarkets. Radon gas is seeping up through the floors of at least 3,000 buildings in this city, where uranium mill tailings (sandlike waste from the mines) were used as subfill and backfill around the foundations. This means that nearly every building constructed from 1952 to 1966 poses a potential health hazard to this quiet, unpretentious city that calls itself "the all-American city with foresight."

It was not foresight that prompted the removal of over 300,000 tons of uranium tailings from the Climax Uranium Company's radioactive garbage dump along the Colorado River, within the city limits of Grand Junction. The fact was that the tailings were given away without charge to builders, excavators, and ordinary citizens, who hauled out the radioactive "sand" by the truckload. It made, they said, an excellent base for concrete. It was good fill. It was great in sandboxes and flower beds. It was marvelous around the base of a fallout shelter and the vaults of at least one Grand Junction bank. It did well beneath the foundations of a home for the mentally retarded and a home for the elderly. Children loved to mix tailings with water and make the / *turn to page 48*

By Nancy Wood

continued

world's first radioactive sand castles.

No one knew, during that fifteen-year period, whether or not the tailings were too radioactive to use. No one could foresee that now, nearly twenty years later, health officials would be pondering these questions: How much radiation is there? What effect will it have on the people exposed day in and day out for the past ten years, the past fifteen, the past twenty?

What about the children raised in a radioactive home and going to a radioactive school and eating food from a radioactive market? How many of Grand Junction's malformed babies and cancer deaths are linked to the radiation?

No one knows, and since no one knows, we are gambling with the health and lives of the largest single group of people exposed to radiation since Hiroshima.

The moral responsibility of this dramatic, if not ultimately tragic, situation rests squarely with the Atomic Energy Commission, and thus the story of Grand Junction is not merely a Colorado problem—it is of vital concern to every state in America where the AEC operates any of its facilities. Although it is Colorado that has received the biggest overdose of the AEC (a current bumper sticker reads "Welcome to Colorado—Playground of the AEC"), at least 17 other states must live with the possibility of disaster from nuclear power plants, radioactive garbage dumps, underground nuclear testing, and factories that manufacture nuclear devices for the AEC.

Grand Junction does not face any of these four nuclear nightmares, yet the consequences of its special peril could be just as bad. Ironically, the residents of this pleasant town are not particularly concerned. The Atomic Energy Commission, under whose jurisdiction all uranium mills fall, never warned them about tailings. Neither did the mill, the only one in the world that allowed radioactive material to be removed. Neither did the builders, one of whom said recently, "There isn't anything wrong with tailings. I've put them in all my flower boxes."

Even if the citizens of Grand Junction had been warned twenty years ago about the possible health hazard of uranium tailings, it is doubtful that they would have paid much attention. Uranium tailings do not look harmful. In color and texture they are similar to fine beach sand, and indeed many a Grand Junction resident has spent a Sunday afternoon "walking on the dunes"—the pile covers more than a city block, is at least a hundred feet high, and from its top there is a magnificent view of the Colorado River and the craggy canyons and mesas beyond. Also, such piles are a familiar sight in this part of the country, where a century of gold and silver mining has left the insides of the mountains in ugly, harmless heaps from one end of the Rockies to the other.

The Grand Junction pile stood there fifteen years before anyone even suggested it might be radioactive. Even now, local citizens scoff at any potential danger, insisting that they have lived with the situation for a long time and "no one has dropped dead in the streets." Indeed, a Colorado public-health investigation into the radioactive houses has been met with indignation, hostility, and disbelief. Asked why repeated statements by Colorado's Radiological Health Section about a possible health hazard in Grand Junction brought no response whatsoever, a local teacher answered, "A few years ago, the AEC had a public meeting on this, and they told us that anyone worrying about the dangers of uranium mill tailings was, in plain language, plain nuts. It has not been proven otherwise to us by these [public-health] people."

The AEC claims now that it did not believe there was any health hazard, in spite of the fact that the pile itself has been proved by the Public Health Service to be highly radioactive. The AEC further claims that, technically, the tailings were someone else's problem during those fifteen years—the state's, perhaps.

An initial Colorado public-health survey of 60 Grand Junction houses built on tailings revealed one common factor: In all but one case, the people did not know they were living on top of radioactivity. Once informed, however, the residents responded with apathy or amusement. One housewife, who has lived in such a house for four years, laughed and said, "We didn't know about the tailings underneath us. But we went and got some for the rose garden and the tomato plants. They grew the size of grapefruit. Before we got the stuff, we called up a friend who works over there at the compound—an engineer. He said he used tailings himself, and we figured if he did, there couldn't be anything wrong with it."

The former manager of a dairy bar in Grand Junction also laughed. He said everyone had always known the tailings were being used and never worried. "You know why these fellows from out of town like to marry Grand Junction girls?" he drawled. "'Cause they light up at night."

But one family took the matter seriously. The Udell Williamses own a modest frame house in the Redlands section of Grand Junction, an area that has been heavily filled with uranium tailings. They have lived in this house for six years and did not know until recently about the tailings.

"A lot of funny things have happened in this house," said Betty Williams, a dark-haired, outgoing mother of six. "There's black fungus on all the windows. The walls and windows sweat. There's a dead odor, like soil left in a box, that you smell in the family room. Does radon gas smell like something dead?" (Radon gas, in fact, has no smell.)

Udell Williams has worked off and on for sixteen years in uranium mines, as a surveyor. One reason for his concern is the fact that his father, who was a uranium miner from 1954 until 1964, died a few years ago of radiation-caused cancer. Betty Williams' family also has a history of cancer. She is a diabetic and reports that she has felt worse since living in her present house. Oddly enough, three of her children have developed chronic ailments in the past six years: one suffers from allergies, another from kidney infections, another from ear infections.

State health officials say there is no connection between any of this and the level of radon gas found in the Williams home, yet they do not know precisely what radon gas might or might not cause. A year-long study is now being made of the Williams house and at least 350 other houses in Grand Junction, to determine whether or not the radiation levels are harmful.

When asked what she would do if the level turned out to be too high, Mrs. Williams replied, "I guess there would be two choices. Moving the house off the tailings or trying to sell the place. But we'd have to tell people there was radiation here—you couldn't wish this on innocent victims and go through your life wondering about them."

As the Williamses grapple with their problem, the rest of Grand Junction is sitting on a similar time bomb as the state health department begins its U. S. Public Health-financed study, which will not be completed until March, 1971. At the same time, the effects of radon gas are not due to show up for two years or more, if a twenty-year period is to be considered the time to start watching for radiation-caused disease. Several doctors believe that to be the minimum time it would take for lung cancer or bone disease to appear; others say effects could skip a generation; still others argue that not everyone exposed for long periods to radon gas will be affected.

If the investigation shows that the radiation level is dangerous, an appalling question arises: What happens to the people and houses involved?

The health department calls this a hypothetical situation, but ventures to say, "The responsibility will probably have to be settled in the courts. The owner will blame the contractor, who then will blame the mill, who then possibly blames the government—the AEC, in this case. This may take a long period of time, and during that time we cannot have these people living in homes above safe levels of radiation."

So far, health officials have proposed two alternatives—moving people out or installing some kind of ventilation system—alternatives that may never come to pass if no health hazard is found. The health department refuses to speculate on what the outcome of its study might be. One radiological health expert would say only that "Grand Junction *could* be declared a disaster area a year or two from now."

Only one AEC man seems willing to admit that the AEC may have done anything wrong. He is Allen

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Jones, a benign-looking mining engineer who has been manager of the Grand Junction AEC complex since 1956. Jones knew that the tailings were being removed and felt there was no danger. He insists that, according to regulations, the AEC had no jurisdiction to stop the removal, nor did it have the authority to check for on-pile radiation. Jones struck at the heart of the matter when he said, "There was a general level of ignorance at that time on everyone's part, including the AEC. Call it a moral responsibility—we should have known more than we did. It was a mistake to use those tailings, but before you say who is responsible, you have to first determine if there is a hazard at the levels we're talking about. I wouldn't say there is no problem, but I wouldn't get panicky over a high reading, either. Ventilation would probably solve it."

At Uravan, a dismal uranium-milling town ninety miles from Grand Junction, one family has already been forced to move from a highly radioactive house, which has stood on a tailings pile at least forty years. The house was built during the radium boom of the 1920s. Alerted by the Grand Junction findings, mill-company leaders began an independent search for radon gas in all 175 housing units in Uravan. They discovered two that, according to plant manager Larry Larison, were "far enough above the safe maximum level of radon gas to move the families out immediately."

Andrew Schmaltz, Sr., is 55 years old, and his wife, Audrey, is 44. For the past nineteen years they lived in company house D-3 in Uravan, on a dirt alley not far from the mill. They have put their own time, money, and labor into the six-room tar-paper-covered house, planted trees and flowers in the yard, and put up a white picket fence, so the dog can't get out. Their home is more appealing than most in this dusty mill town. It is also more radioactive, for it was built directly on a tailings pile known to contain radium concentrations of undetermined amounts.

Their three children—Andrew, Jr., 19; Paula, 17; Gwyn, 15—were born and raised in house D-3, and a new grandson has spent his first 15 months here. Their health records show no radiation-linked irregularities.

However, Dr. Geno Saccamano, of Grand Junction, an internationally recognized pathologist and the first to prove that a combination of smoking and radiation inhalation in uranium mines increases the hazards of lung cancer about 30 times, said: "This level of radiation apparently hasn't been harmful to the Schmaltzes. But it could serve as a test case. The radiation levels I think are very low, but the results of further study are important. We just don't know enough to be sure. In the Grand Junction study, for instance, it would be interesting to see the levels of health in houses where there is an above-standard level of radiation combined with smoking."

But currently no federal funding is available for Dr. Saccamano, or anyone else, to do such a time-consuming and expensive study. It is estimated that a thorough investigation in these homes would require a five-year program costing $150,000 a year.

On the last day Audrey Schmaltz spent in her radioactive house, the weather was cold. She looked sadly out the window toward the elementary school, the post office, and the company store, which have formed the nucleus of her life. The Schmaltzes had been given twenty-four hours to move into new quarters, and they were a bit dazed.

"The—the contamination—I'll call it that now," said Audrey Schmaltz. "They tried to tell us it wasn't in our clothes or rugs or furniture. I don't see how that can be true."

"No, it's not in us," said her husband, pulling a worn and ancient Eisenhower jacket over his plumber's work clothes. "None of us is sick. Never have been. We don't see why we have to move after nineteen years. We can't afford the extra rent. The heat costs more. I got to drive to work. Our kids hardly had any Christmas this year. I feel like crawling in a hole."

Twenty-four hours later, they were gone, all their things packed in a pickup truck and carted across the river to a prefab house "between two of the big shots." The state health department will monitor the radiation in house D-3 for a year, and then, perhaps, the Schmaltzes can move back in.

While the radiation problem in Grand Junction affects more people than elsewhere, the AEC is directly responsible for three other potential health hazards in Colorado.

First is the super-secret Dow Chemical plant at Rocky Flats, near Boulder—which, among other things, manufactures nuclear warheads for the AEC. A $50-million fire at the Rocky Flats plant on May 11, 1969, burned an additional $20 million worth of plutonium, enough to build 77 atomic bombs like the one dropped on Nagasaki. Air- and water-pollution tests by the Colorado State Department of Health turned up no evidence of a plutonium leak—that is, no contamination was found.

However, an independent study by Dr. Edward Martell, a nuclear chemist, former AEC consultant, and a member of the Colorado Committee for Environmental Information (a group of Boulder-based scientists), made an alarming discovery: Several miles downwind from the plant, concentrations of plutonium in the soil were hundreds and thousands of times more radioactive than normal background levels. The AEC, while it finally agreed with Martell's findings, did not agree with his interpretation: that, considering the daily releases of plutonium into the environment, the nearby Denver metropolitan area of half a million people faces potential contamination.

The second potential health hazard is at Platteville, twenty-five miles from Denver, where the AEC and a

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utility company, the Public Service Company of Colorado, are building a $144-million nuclear power plant. Sixteen similar power plants are already in operation in this country, 52 more are being built, and 37 are in the planning stage. The risk these plants pose is enormous. The AEC itself, in a 1957 report, said that a reactor thirty miles from the nearest city could, in a bad accident, kill 3,400 people, injure 43,000, and cause $7 billion property damage. The potential dangers of atomic power plants are so great that no single insurance company will issue a policy for them. A special act of Congress provides $560 million worth of insurance ($82 million of it comes from private insurance firms) for nuclear power plants, and it absolves the firms of liability above that amount.

The third hazard results from the disposal of highly radioactive nuclear wastes. Dow Chemical's wastes, for example, are now being trucked from Colorado to an AEC burial ground near Idaho Falls, Idaho. Idaho health officials have no jurisdiction over this radioactive cemetery, yet want it removed, because it lies within 300 feet of Idaho's major water supply.

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If pressure is brought on the AEC to take its nuclear wastes out of Idaho, it could do one of two things: keep them at Rocky Flats in Colorado, or provide a new burial ground at any other federally owned piece of land in the United States. Despite the great efforts the AEC has made to prevent any contamination from such wastes, people are growing increasingly edgy about having them buried in their back yards.

Thus far, the only states that have dared to establish any sort of regulations over AEC activity are Minnesota and Maryland, both of which are concerned with nuclear power plants, and both of which have tried to set more rigid radiation controls over these plants than the AEC itself requires. Minnesota is being taken to court for its efforts. Seventeen other states have joined Minnesota's cause, pledging that "the states have and must retain the authority to establish environmental controls as required by special conditions." The case is expected to be taken to the Supreme Court, and the decision may well set a pattern for future federal-state battles over protecting the environment.

In Washington, meanwhile, the AEC finds itself brought under governmental fire for the first time. Doubts over the ability of Congress' Joint Committee on Atomic Energy to control its unruly child have brought about several proposals. One is from the Department of the Interior, which has requested a role in the "evaluation and decisions on the effects of nuclear explosives." A bill sponsored by Representative Jonathan Bingham of New York would transfer regulatory powers over commercial uses of atomic energy from the AEC to the Public Health Service. Another bill, proposed by Senator Mike Gravel of Alaska, would set up a study commission composed of scientists outside the federal government to provide an independent "evaluation of the air and water pollution and other environmental effects of underground uses of nuclear energy."

Probably the most significant proposal affecting the AEC is a Nixon Administration plan that would set up a new agency, the Environmental Control Administration, which would set radiation-protection standards.

While most of Colorado's political leaders have refused to take a stand against the AEC, one U. S. Congressman, Representative Frank E. Evans, warned that "the AEC and the Joint Committee on Atomic Energy need to review and revise or eliminate certain aspects of our present atomic-energy program and particularly restudy safety standards, until the American public can be assured, without doubt, that there is no danger to their lives, property, and well-being."

Some of these efforts could be choked off by bureaucracy or die in committee. The only way to assure the same system of checks and balances over the AEC that every other government agency must endure is for a ground swell of public opinion and pressure to force the states and the federal government to act.

Ultimately, of course, it is the AEC that will have to explain why the situation in Grand Junction was allowed to develop. And if the report shows that the radioactive level is high enough to constitute a real danger, it is the AEC that will be blamed. But that would be small consolation for the people who would have to give up their homes and who might face a lifetime of worry over the long-term effect of the radiation on themselves and their children.

It's easy to get bogged down in figures and statistics and claims and counterclaims. It's harder to forget people like Audrey Schmaltz, whose last comment to me was, "I wonder if they will let me come back and pick the grapes out of the yard next year. And the peaches. I'll worry about the peaches."

The AEC may have a lot to explain, but it is all of us who will bear the consequences. ■

McCALL'S SEPTEMBER 1970

SYLVIA R. ZOELLER
31 CAWFIELD LANE
HUNTINGTON STATION, N. Y. 11749

Dec. 1, 1970

Dear Sirs,

I am a Junior at Walt Whitman High School located in Hunt. Sta., L. I. I was assigned to write to you about the article in the Sept. 1970 issue of Mc Calls magazine For your infomation I am enclosing the first page of the article. The members of my health class and I are very shocked and concerned of what we have read, and we would appreciate any infomation on how the citizens of Grand Junction feel of the seriousness, truthfulness or falsity of the article. We would be grateful for any pictures of Grand Junction, because

Atomic Menace—1970!

RADIOACTIVE WASTE MATERIALS THREATEN U.S.

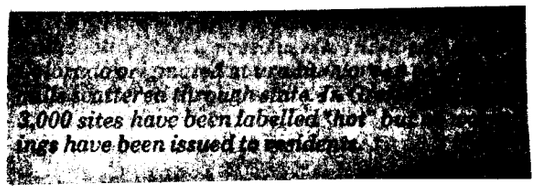
SAGA 50¢
MAC AUG/70

Ever hear of uranium "tailings"? It's a fine, sand-like end product from the dozens of uranium ore-processing plants scattered throughout the Far West. Thought to be of no value, or danger, hundreds of thousands of tons of this material were dumped on the plains, to be snatched up by building contractors who used it on construction jobs—like hospitals, homes, schools and churches. Now, it's been discovered, the stuff is radioactively hot and we are facing a catastrophe of monumental proportions.

In Grand Junction, Colo., an e
timated 3,000 "hot" sites have al
ready been reported by the state health
department, which says were built with
radioactive waste from a local uranium
processing plant.

State officials claim the plant let
200,000 to 300,000 tons of hot waste
materials be hauled away to various
parts of Colorado to be used as fill
material. Nobody—official or other-
wise—can estimate how many hun-
dreds of thousands of additional tons
are now scattered about in other
areas of the Far West.

But it is there, and it is considered a health hazard of monumental proportions.



3,000 sites have been labelled 'hot' ... ings have been issued to residents.

In just one city, Grand Junction, Colo., an estimated 3,000 "hot" sites have already been reported by the state health department, which says they were built with radioactive waste from a uranium processing plant.

Despite the hazard, no general alarm was flashed. No warning to the general public was issued. If it was, that warning is now buried in some government file. It never reached the people of Grand Junction.

Behind the scenes a bureaucratic wrangle broke out that is still going on. Colorado state health officials and the AEC at first weren't even sure they *had* a problem. Nobody was stricken with a fatal illness directly attributable to the tailings. Nobody was leaving Grand Junction in a panic despite the fact that Robert D. Seik, radiological health officer for the health department, estimated that 3,000 building sites in that city of 23,000 persons are built on or around hot tailings.

Why more action has not been taken is a mystery shrouded in the bureaucratic red tape, because the highest radiation readings taken in Grand Junction are *180 times greater than screening levels set by the health department!*

By itself, radon is not much of a problem. When released in open air, it quickly dilutes to safe levels. If inhaled by humans, most of the gas is exhaled without danger to the body because it will not cling to the linings of the lungs.

So, as long as the tailings are in open piles, some experts believe, they are not suspected of being a threat to human life. But when radon is trapped it decays into something scientists call "radon daughters"—tiny bits of radioactivity which can wrap themselves around dust particles and ride into human lungs. The eventual result is fatal lung cancer. On that point *all* experts agree.

As the tailings heaps grow bigger and bigger, so, too, does the potential for a catastrophe beyond human imagination. What remains now is a deadly waiting game.

Radium is still half alive after 1,620 years. The average American man lives 70 years—with luck. ★THE END

VI'S Journal

Denver, Colo. Thursday, October 14, 1971

Uranium Miners Suffered Genetic Damage, Study Shows

Radon Gas Thought To Be Cause Of Chromosome Aberrations

By Sherry Keene

Grand Junction uranium miners exposed to 222 Radon gas show evidence of chromosome aberrations, according to a study that has been underway for more than a year.

Results of the study being conducted by Dr. William Brandon of the University of Denver, and Dr. Geno Saccomanno of St. Mary's Hospital in Grand Junction, may be applicable to residents in Grand Junction who have been similarly exposed.

Health Department studies have shown that over 3,000 homes in Grand Junction are built on mill tailings left over from uranium mining during the 1940's.

The first year of the study was funded by the American Cancer Society, Colorado Division. The second year, now underway, is being done under the auspices of the Bureau of Radiological Health (U.S. Public Health Service).

This particular study, only the second of its kind, is of chronic internal effects of radiation. There can be acute irradiation or chronic irradiation. There can also be external or internal irradiation.

Brandon's study is one of the few ever done on occupationally incurred internal radiation.

In the test, fifteen miners exposed to 222 Radon "Daughters" and 15 normal, age-matched, non-miners for a control group, were used. Mining experience ranged from 1-28 years estimated cumulative exposure. They had accumulated 10-5400 work level months.

According to Brandon's study, numerical changes and structural "chronatial gaps and breaks and isochromatial gaps" occurred with twice the frequency in the uranium miners as they did in the non-miner control group.

There were also incidences of "stable" cell abberations.

It has been shown in the past that studies indicate an increased incidence of lung cancer in occupationally exposed miners. In the western United States there are 6,000-7,000 uranium miners.

Brandon's study, however, was of the non-pulmonary cells of the miners to show if they had undergone mutational changes as a consequence of exposure to long-lived radon daughters.

222 Radon is a radioactive isotope that breaks down in the human body into long-lived "daughter" products, 210 lead and 210 polonium.

It has been shown that short-lived, high energy 222 Radon has an effect on the pulmonary tissues. But the only other study of this type, of long-lived "daughters", was undertaken several years ago by a group of Yugoslovian scientists.

Their report, according to Brandon, is completely at variance with his findings. They reported no mutational changes.

Study Shows Genetic Damage

Study Shows Genetic Damage

From Page 1

In order to do the study, blood was taken from miners and the control group. It was flown to Denver where it was cultured and studied by microscope. Various controls were set up throughout the procedure.

The individual looking at the slides was not aware of the case history of the individual.

In the study now underway there are 50 miners and Brandon said he hopes to have 130 miners and controls by the end of the year. Those in the control group were pre-determined not to live in homes built on mill tailings.

Compared as a group, Brandon says, miners exceed the control group significantly in every traditional category. Technical terms for the aberrations found include: dicentric chromosomes, ring chromosomes, acentric fragments, translocations and chromatid exchanges.

In one slide that was shown to be of a miner of 50, with 2800 work level months, all of these aberrations were present.

Brandon says it is premature and unwise to attempt to extrapolate a health hazard or effect from the results of his study. Primarily what he has shown is that mutational changes do occur in non-pulmonary tissue exposed to long-lived 222 Radon daughters.

The study can be used as a biological indication of response to internal radiation, Brandon said. There have been no studies to determine its relevance to reproduction.

Some of the miners looked at, Brandon said, are possibly at the same level of exposure as some of the people in the Grand Junction homes.

Brandon feels additional studies of Grand Junction residents might prove feasible, including a study of the incidence of lung cancer in the city.

Hot Sands

Grand Junction, Colo., is a leafy little river city that has maintained a seemingly splendid balance between its industry and its ecology. While uranium-processing mills sprang up on the city's riverbanks, Grand Junction's orchards stayed fertile, its skies smogless—and the fine gray sand left over from the milling process turned out to be just what the town needed for its postwar building boom. Tons of the sand, called "tailings," were dumped into housing projects as landfill, or mixed with cement in the construction of homes, schools and public buildings. But Grand Junction's construction windfall may turn out to be a crippling curse. The tailings, radiation tests show, have been leaking high levels of radon 220 gas—a dangerous by-product of uranium decay that can seep through solid cement —leaving much of the city literally atop a hotbed of radioactive wastes.

No one can say for sure precisely how hot it is—and how great the danger may be. Grand Junction residents are at least outwardly calm. But the city of 19,671 has been contaminated—and so, perhaps, have some others. According to the Environmental Protection Agency, which is conducting tests, as many as fourteen other Colorado towns may be similarly affected—and the hazard could extend to eight other uranium-rich states in the West stretching from Arizona and Texas all the way north to Oregon and Washington.

Danger: In Grand Junction, it is estimated 300,000 tons of radioactive tailings have been stuffed into basements, breezeways, fireplaces, porches and sidewalks. Gardeners found the sand a fertile bed for growing giant petunias—and tomatoes. At least 4,000 homes, plus 1,000 businesses, schools and churches, have been declared "hot" so far. Only three families have been warned of imminent radiation danger—though a fourth was told to turn a bedroom into a den to avoid prolonged exposure to radiation from beneath the room. And in one local elementary-school classroom, radiation levels are now rising to more than 38 times above normal each night, and must be dispelled by ventilation before classes begin each morning. Worse, scientists say there is no way to decontaminate the tailings chemically now—and estimates for removing the hot sand run as high as $14 million.

Just what the consequences might be if the tailings are not removed is uncertain. Scientists have long tied radiation exposure to increased incidences of leukemia and other forms of cancer—but the questions of dosage and length of exposure are still unsolved. A study by Dr. William F. Brandon of Denver University has revealed marked chromosome changes among uranium miners who were exposed to radon 220. But similar tests begun recently on Grand Junction infants will take a year to finish.

The problem actually surfaced five years ago, when a county health department worker left a radiation badge on his kitchen table and found that it had turned color overnight, indicating potential danger. Health authorities traced the radiation to tailings supplied by the Climax Uranium Co.—one of seventeen uranium firms then operating, under license from the Atomic Energy Commission, in the Colorado River basin. The tailing giveaways were discontinued. And an effort is now being made to cover the massive sand heaps with clean dirt. But radioactive dust still leaches into the Colorado River and swirls on the wind to far-distant towns. And to date, nothing has been done about the problem that the tailings have created in Grand Junction.

Blame the AEC: The chief reason is that no one is willing to pay for removing the tailings—or to accept responsibility for a dilemma that could turn into a disaster. Only four uranium firms still operate in the river basin—and they refuse comment on the matter. Grand Junction residents and officials lay the blame squarely upon the Atomic Energy Commission, which, until 1968, had sole responsibility for setting health standards for uranium operations. At no time, they say, did the commission issue warnings to state health officials or prospective home builders. The AEC insists it sent letters warning of radiation hazards to all eight of the affected states back in 1961—and contends that in any event, its responsibility ended when the uranium ore was removed.

Ultimately, the question of liability will have to be settled in the courts. But in the meantime, Grand Junction residents seem determined to look on the bright side. "We're not panicking," Mayor Stanley Anderson insisted last week. "No one has yet shown that this radon gas is really hurting anyone." But the grim possibility that it might inevitably clouds the mayor's official optimism. As Mrs. Joyce Clark, a Grand Junction housewife who learned that her daughters' bedroom contained dangerously high radiation levels, observed with a sigh: "Naturally, I worry. But my husband has been committed to his job here too long for us to leave the city. And as far as I know, every town in Colorado may have radiation. So what can we do?"

Newsweek, October 18, 1971

area We were considering purchasing property in that area until we read an article about the A E C's waste product fall-in there. Is the radon gas permeating through the ground? If so, what is effect on crops and livestock? We understand the radon gas is above the level for good health, crops, and livestock.

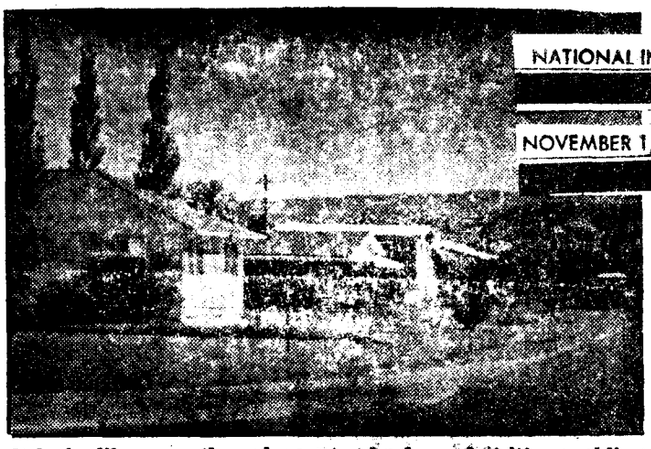
Please give this your prompt attention. Thank you.

Sincerely,

Mr. + Mrs. J. H. Ridgely

11527 Venice Blvd

L A Calif 90066



It looks like any other pleasant suburb -- but it's crackling with gamma rays and radon gas.

NATIONAL INSIDER

NOVEMBER 1, 1970

Tick...Tick...Tick...

THIS TOWN'S A TIME BOMB!

By LUIS DEMARCO

THERE'LL BE A HOT time in the old town of Grand Junction, Colo., tonight -- and tomorrow night and the night after that.

Why? Because half the city is built out of uranium recently found to be polluted with radioactivity from nearby uranium mines.

Four thousand homes have been built in the area since the mid-1950's -- and nearly every one of them has the deadly hot stuff in the foundations.

THE CRACKLING hot material was trucked in from abandoned mines by various construction companies. The sandy earth seemed ideal for the building boom going on at the time. Nobody gave a thought that new residents might literally be moving into their own tombs.

Funny thing, though; now that state and federal health officials have discovered the crackling hot material in all the dwellings, few residents seem alarmed.

One resident, a housewife with several children, asked what she thought about the possible danger to herself and her family, answered: "But we LOVE it here in Grand Junction. Why should we move?"

Mr. and Mrs. Udell Williams, parents of a young son, say they're not leaving their radioactive home.

A radiation expert goes over a house with a scintillator -- a device for measuring radioactivity. The dwelling was loaded with it.

Told that continued living in her atomic home might be hazardous to her health, she said: "You get used to it a little at a time. It's not like having an H-bomb dropped on your roof."

THIS IS A typical attitude in Grand Junction. What's ironic in the woman's case is that a close relative already has died of radiation-caused cancer after working several years in one of the uranium mines.

Radiation experts have taken readings on most Grand Junction buildings and found a uniform incidence of radon gas and gamma rays. Prolonged exposure to either raises the risk of cancer and leukemia.

What the experts can't agree on is whether the readings in Grand Junction are high enough to threaten the lives of the residents.

BUT FOR THE present, the folks are unworried. There's no place like home -- even if the home is humming with radiation death.

Here's a Colorado uranium mine -- contractors used dirt fill from the leavings to build houses.

NKNOWN' A RADIATION RISK?

DENVER POST 1-24-71

Radon Haunts Grand Junctio

By BILL ORR

AND JUNCTION, Colo. — ty years ago few people in d Junction knew what was. Thanks to the urani- oom of the 50s, quite a few people became aware of tuff a decade ago.

was, they discovered, one e radioactive decay prod- of radium. Gaseous in it sometimes played hob accurate geiger counter ngs in drill holes and un- ound mines. But even by relatively few western adans knew or cared radon.

lay it's a household word Grand Valley. The famil- hasn't bred contempt but rn.

zen concern is shared by nment officials at all , and particularly by the ido Department of Health, tomic Energy Commission he Environmental Protec- gency.

se three agencies are iating an intensive sur- f homes and commercial ngs in the Grand Junction o determine the extent of "elevated radon contam- n levels." They want to emedies and to learn what longtime exposure to low of radiation might have ple.

N IN '53

ıd Junction's radon prob- - or situation, as some unity boosters insist it be — began in 1953 when y was in the midst of a m boom and an accom- g surge in construction /.

of the mills processing m ore was operated by : Uranium Co. (later an Metals Climax) on uthern outskirts of the fter the uranium oxide had been leached from the ore, thousands of tons of smooth, light-colored sand, or "tailings," remained.

With construction at a record high, there was a brisk demand for good-quality, washed sand to be used in concrete and as fill material. The Climax tailings pile offered a ready source, and company officials were happy to give the sand to anyone who hauled it away.

Between 1953 and 1966 an estimated 150,000 to 200,000 tons of tailings were hauled away by 38 contractors. They went into concrete for floor slabs and basements, sidewalks, drives, swimming pools and for countless other uses. Large tonnages of the tailings were also employed as fill material under structures and in water and sewer installations.

Minute amounts of radium which remained in the tailings were the key to what has become a radiological Pandora's box. At that time the radium wasn't considered significant. Later studies, many of them conducted by Dr. Geno Saccomanno of Grand Junction on uranium miners, indicated a strong possibility that radon, a radioactive decay product of radium, could be a contributing cause of lung cancer.

Technically, the gaseous radon is not the major culprit, since it is quickly breathed in and out of the lungs, but radon rapidly decays into radioactive solids--polonium, lead and bismuth--which impinge upon the soft tissues on the lung.

'66 FINDING

The first clue that radon was present in sufficient levels to cause concern came in 1966 when the Colorado Department of Health placed film badges in several buildings in Grand Junction known to contain tailings.

The blackened badges confirmed suspicions. The radon was seeping through the pores of the concrete. The radiation level was not known since the film badges could only detect the presence of radioactivity above normal background count, not its intensity.

On the basis of the preliminary findings, the state ordered a halt to the use of tailings for construction on Aug. 1, 1966, and the health department sought help in determining the scope of the contamination.

Southwestern Radiological Health Laboratory joined the project, assisting first in development of special instrumentation. The effort has since brought together the three major government sponsors plus Colorado State University and the office of the U.S. surgeon general.

Answers to three basic questions are being sought: 1) Extent and level of the contamination. 2) Remedial steps to be taken. 3) Long-range effects, if any, upon persons exposed for prolonged periods.

The contamination survey is well under way, although officials aren't certain how much more time will be required to complete it. Some 4,250 locations had been screened by Jan. 15 of this year. Some 2,275 of these had uranium tailings on the property. Of that number, 1,557 structures were involved and 718 locations had the tailings present but away from structures.

SUSPECT LOCATIONS

A health department team headed by Bud Franz of Grand Junction is attacking the survey problem from several directions. City and county building permit files for 1952 through 1966 have been used to pinpoint "suspect" locations.

A mobile unit which can detect anomolies (areas of higher than normal radiation) is then used to check suspect locations. With this information, personnel then move in with hand-held equipment to determine the cause of the anomoly—radon or other.

Once the presence of radon has been confirmed, the cooperation of the property owner is sought so that radiation intensity can be determined.

External gamma radiation can be measured in a matter of minutes, but air samples to determine radon levels require longer—one to two weeks. A device called a thermal luminescent dosimeter (TLD) is placed on the property to measure the cumulative radon. Forty such units are currently in use and an additional 35 are being built at Colorado State University. CSU is also cooperating in interpreting the findings of the TLDs.

LEVELS FOUND

Franz reports that the highest levels found thus far are 400 microroentgens of external gamma radiation and air samples at one location showed the equivalent of 1.8 working levels of radon contamination.

Safe guidelines issued by the Surgeon General's office in August fix the level at which remedial action should be considered as .01 milliroentgens per hour of gamma radiation and .05 working levels of radon.

Dr. Robertson Augustine, Chief of the Radiological Research branch of the Environmental Protection Agency however, that the fact measurements exceeding surgeon general's guid have been recorded, doe mean that they pose an i diate, or even a long-term ard. He likened the guid to an auto speed limit. sa ".Just because you excee posted speed limit, you'r necessarily going to hav accident, but it's a good id stay below the limit."

Of the three areas unde vestigation, the least is k about potential long-rang fects of radon exposur human beings. It appears only time can provide th swer to that question.

Health authorities admit simply don't have any rea swers. They point out tha Grand Junction situatio unique. Radiation sic caused by atomic blast nuclear accidents inv levels many thousands of greater and for relatively periods of exposure. 20-year study of radon e on uranium miners inv only adult males who had exposed to much higher l of radiation.

Federal and state h authorities and physician pert in the radiation field agreed on one point: The no probability of any ill e from short-term exposure the odds are that no r long-term damage w found. On the latter point, can't be absolutely certain that's why a major res project is under way and C Junction has a large numb vitally concerned citizens.

Grand Junction Gets Tag of Top 'A-City'

DENVER POST 8/18/70

Colorado Springs author Nancy Wood, whose latest book was banned as a gift to the nation's governors because it degraded two Colorado cities, has written the lead story in the September issue of McCall's magazine featuring Grand Junction, Colo., as "America's Most Radioactive City."

Mrs. Wood describes the perils of radon gas seepage in the Western Slope towns of Grand Junction and Uravan, Colo., and blames the Atomic Energy Commission (AEC) for policies which caused it.

COMMENT MADE

"We are gambling with the health and lives of the largest single group of people exposed to radiation since Hiroshima," Mrs. Wood writes.

Mrs. Wood says although Colorado has "received the biggest overdose of the AEC," at least 17 other states "must live with the possibility of disaster from nuclear power plants, radioactive garbage dumps, underground nuclear testing, and factories that manufacture nuclear devices for the AEC."

Her story calls the AEC responsible for three other potential health hazards in Colorado:

—The "super-secret" Dow Chemical plant at Rocky Flats near Boulder which manufactures explosive triggers and electrical components for nuclear warheads.

—The nuclear power plant at Platteville being constructed for the Public Service Co. of Colorado.

—The disposal of highly radioactive nuclear wastes from the Dow plant to an AEC burial ground in Idaho.

Her latest book, "Colorado: Big Mountain Country," was taken off the guest list at the National Governors' Conference last August in Colorado Springs when influential Colorado Springs and Pueblo residents said they resented remarks in the book about the two cities.

Grand Junction radon gas levels called hazard

By JAMES CRAWFORD
Rocky Mountain News Writer

Uranium mine tailings used as landfill in the construction of certain Grand Junction public schools is generating radon gas beyond a safe maximum, the Colorado Board of Health learned Wednesday.

The board also was told that the tailings, used by area building contractors for a number of years through 1966, also are producing radioactive particles at sites in New Castle, Palisade and Collbran as well as in Grand Junction—about 4,000 sites in all.

"It has become an area problem—quite extensive," said P. W. Jacoe, director of the State Health Department's air, occupational and radiation hygiene division.

Jacoe reported that of 27 preliminary samples taken in District 51 public schools, radiation hygiene specialists found 13 where radon gas concentrations exceeded .01 physical units of energy, the level considered a safe maximum for permanent living conditions.

State Health Department officials have repeatedly stressed that the figures do not necessarily reflect an immediate health hazard.

'Grab sampling' method

They were optained by what Jacoe described as "grab sampling"—a procedure to determine what sites warrant in-depth sampling.

In-depth sampling began in various homes and other buildings in Grand Junction on April 20, Jacoe said, and the results at 150 such sites should be available by Sept. 1.

Radon gas, produced by radium in the mine tailings, degenerates into radon "daughters" which can enter the lungs on airborne particles. National tests have shown uranium miners exposed to unsafe levels of radon gas over periods of 15 to 20 years have developed lung cancer.

Jacoe told health board members that a second phase of testing will begin next June with an effort to identify all persons who have inhabited homes built on the tailing material. The search will cover a 20-year period, he said.

Mortality-morbidity study

Health officials also will begin next June an intensive mortality-morbidity study of residents in the Grand Junction area, aided by a computerized survey of death certificates and medical records.

Preliminary checking already has begun under the direction of Dr. Cecil Mollohan, chief epidemiologist for the health department.

Working under a 3-year grant of $150,000 from the U.S. Public Health Service, Colorado State University wants to haul some 50 tons of mine tailings to Fort Collins to study control methods, Jacoe disclosed Wednesday.

"We haven't yet given them a license to do it," he told board members.

'No Proof,' But Doc Took Notice Of Birth Defects

By ANTHONY RIPLEY

GRAND JUNCTION, Colo., (NYT) — The infrared spotlights have come down again on this city on the western slope of the Rocky Mountains over the widespread use of radioactive sands in building projects.

The state government is aroused and calling for federal action. The Joint Congressional Committee on Atomic Energy is planning hearings on possible health hazards. A state-federal steering committee has recommended removal of the radioactive material from habitable buildings.

But out of sight, away from the center stage where the politicians and bureaucrats play out their public roles, stands a worried small-town doctor who has started a quiet campaign to see if the dangers of radioactivity to human health can actually be measured in Grand Junction.

Dr. Robert M. Ross Jr. practices children's medicine in a white house under the elms on Seventh Street.

Like most people in Grand Junction, he has known for some time that radioactive sands — called "tailings," which were dumped in piles back of the Climax Uranium Co. ore-processing mill — have been spread all over town. They were trucked away by builders to use as backfill and base material for pouring concrete slabs, basements and patios.

It has been in the magazines and newspapers across the country for several years that radioactivity comes right up through the concrete in the form of a gas called radon and that radon is blamed by medical experts for the high rates of lung cancer among uranium miners.

Many in Grand Junction dismissed the problem as distortion by the press — and some still do.

But Ross was not among them.

'A Vague Sense'

Watching the patients come into his office, he was troubled by what he calls a vague sense that something was not right. He said he was seeing too many birth defects, too much cancer in children.

He began to take extra notice of cases of blood, muscle and nerve cancer and of birth defects; mongolism and premature fusion of the skull bones of infants.

"There is no proof," he added. "Even with the number of children with malignancies and genetic anomalies, the figures were not really beyond what one should expect."

But he couldn't shake the worry from his mind.

He spoke of his concern to Dr. C. Henry Kempe, chairman of the Pediatrics Department at the University of Colorado Medical Center in Denver.

Kempe and his associates went to the Colorado Department of Health with the problem and it was thrown onto the agenda of a meeting arranged with Gov. John A. Love in March. At the meeting were three representatives of the State Health Department and six from the Atomic Energy Commission.

They reviewed other atomic matters in the state and when the indoor radon problem came up, the State Health Department suggested that the AEC finance a chromosomal study of infants in Grand Junction.

The AEC response was negative.

But the State Health Department persisted and persuaded the governor to spend $18,000 from his special research and studies fund to finance the project.

Work began in July and involves chromosomal studies of infants born during 1971. About 700 babies a year are born in Grand Junction. Comparisons are being made between infants conceived and carried until birth in homes built on tailings and those from homes free from the radioactive sands.

Dr. Herbert Lubs, a geneticist with the university medical center, is doing the study and said no results would be known until next year.

CRITERION
OF MESA COLLEGE
Grand Junction Colorado 81501

VOL. No. XXXVIII WEDNESDAY, OCT. 20, 1971 No. 5

Radon Tailings Found

After an informal interview with Aspen Hall residents, it appears that few students are aware or informed of the discovery of radon tailings under the first floor of that dorm, deemed significant by a committee meeting last Wednesday.

As a result of a special meeting of the College Committee, male students residing on the ground floor of Aspen will be given an opportunity to move out.

G. A. Franz III, who is conducting radon studies for the Colorado Department of Health, advised the committee that there is no immediate danger to student health. He also indicated that the radiation tailings were only about one-half the figures originally reported.

An estimated 70 students living in the hall on Texas Ave. between 11th and 12th are affected by the decision. Students living on the second floor are not considered to be in the radiation zone.

When asked by committee president, Herb Bacon, whether the tailings were an immediate problem, Franz answered that there was no immediate danger.

He added that exposure to tailings in Aspen Hall is less than that of a radiological technician.

Director of student housing Jay Jefferson pointed to the fact that decisions to move out of the residence halls should be made by both parents and students since some of the dorm residents would merely be looking for excuses to move into off-campus apartments. In the informal survey, several of these excuses to move were in fact expressed by Aspen dorm residents.

Dick Appel, college business officer, noted that if the ground floor rooms were vacated for the entire school year, there would be a $20,000 to $25,000 loss of revenue.

The committee meeting action was taken after receipt of a letter from Dr. Roy L. Cleere, director of the Colorado Department of Health. However, the letter explained that as yet, the results of radon samplings were neither available nor conclusive.

DR. & MRS. H. DOUGLAS BARNSHAW
4961 WEST ROWLAND AVENUE
LITTLETON, COLO. 80120

7/23/70

Dear Dr. Saunders;

I had written you about the possibility of psychiatric practice in Grand Junction; I appreciate your return letter, and the suggestion to visit. We took a vacation in June and I thought we might make it to Grand Junction, but we visited in Salt Lake instead.

The reports of radioactivity have cooled my interest, and not knowing how to asses this, I haven't proceeded any furthur. If you have any suggestions on this I would appreciate them.

Sincerely,

H. Douglas Barnshaw Jr.

How Serious Is Problem Of

The Daily Sentinel Sunday, Oct. 24, 1971 Page 3

Tailings In Schools?

By PAUL HATHAWAY
Sentinel Staff Writer

The fact that radioactive uranium mill tailings were used in construction of some Dist. 51 school buildings is no great surprise to many Valley residents. There are few commercially-constructed buildings in the area built in 1955-66 that do not contain some tailings, somewhere.

But the facts that 23 schools are affected, and that removal of all tailings detected would cost more than $2.7 million, have jolted quite a few people.

Many of those expressing concern over the tailings since their presence was verified Friday by the AEC and school officials are parents of children also exposed to tailings emissions at home.

From what data is available, it appears that much of the concern may be entirely unwarranted; some of it may be quite justified.

Dist. 51 directors objected to the AEC's releasing the list of schools having tailings, on the premis that it would cause undue public concern on both health and budgetary points.

They made it a point not to say what levels of radioactivity had been recorded, and said they do not intend to remove any tailings until told by the State Health Dept. what to do. There is no immediate danger, they said, and it might take several months before a decision is made to remove some or all of the tailings.

In the meantime, however, a lot of taxpayers and concerned parents are wondering how serious the problem is, and if the radiation is sufficient to warrant any action.

Until and unless someone such as the health department comes up with some new figures, area residents have only the U.S. Surgeon General's radiation exposure guidelines to rely on as an indication of how much radiation is safe and how much of the $2.7 million tailings removal project is necessary.

The guidelines are not laws; they are only suggestions to state health departments. Although issued by the surgeon general, they are set by two internationally known groups of expert radiologists, medical doctors and other scientists.

Two types of measurement are used in the guidelines — working levels (WL) and millirem per hour (mrh) — measuring the splitting or disintegration of atoms and gamma radiation, respectively.

WLs give an indication of how many radon daughters and the alpha radiation they emit there are in a given area as radon gas from the tailings decays. Gamma rays are similar to X-rays, a form of energy similar to magnetism. Both kinds of radiation are potentially harmful.

To be on the safe side, those setting the radiation guidelines place them at a very small percentage of the amount known to cause any harmful effects. They are a small fraction of the exposure allowed for uranium miners or others working with radioactive materials.

For the population at large, .05 WL for radon daughter activity and .1 mrh for gamma ray exposure is considered the maximum "safe" exposure, with a very slight chance of harmful effects. Above this level, remedial action may be advisable according to the surgeon general.

The "no danger" levels are set at .01 WL for radon daughters and .15 mrh for gamma rays.

Between the "safe" and "no danger" figures is a broad gray area — it isn't known that there is any risk, but neither is it known that there isn't.

All of the 23 schools named by the AEC were listed not because of any known radiation danger, but simply because tailings had been found under or near them.

No tailings have been found at schools having less than 40 microroentgens per hour (mrh) of gamma radiation (up to 30 microroentgens may come from the sun, the soil and building materials such as bricks).

A microroentgen is equal in exposure to a thousandth of a millrem; thus the screening level of 40 mrh is equal to .04 mrh, or only four-fifths of the level below which the surgeon general's lists no danger.

So far, only gamma radiation has been measured at all schools because it takes several weeks' air sampling to arrive at an accurate WL figure for alpha radiation. That testing is underway, and may be completed within a few weeks.

As a general rule, high gamma readings also indicate the likelihood of high radon daughter counts, but there is no constant correlation. It is possible that some buildings with gamm readings in the "no danger" zone could have high enough WL readings to raise them to the "possible risk" category.

It is also possible that the health department or other agency might decide sometime in the future that the combined effects of radon daughters and gamma rays might be risky and revise permissible exposures downward to arrive at an entirely new definition of what is and what isn't safe.

But for the moment, based on the best advice available from the federal government's guidelines for gamma radiation only, several of the 23 schools with tailings can be vaguely, if not categorically, classified as "safe" or "possibly unsafe." Schools in which abnormally high radiation is detected outside but not inside the buildings are considered safe.

Of the 40 schools in Dist. 51, 23 have some tailings under or around them. Two schools — Coates Creek on Glade Park and Gateway — were not sampled, and three others — Redlands, Broadway and Loma — had some tailings on the grounds but none against the buildings. Seventeen indicated no tailings.

The remaining 20 schools are according to the surgeon general — safe, may or may not be safe, unsafe.

Those earning a "safe" rating by virtue of indoor agamma readings of .15 mrh or less are : Appleton, Fruita, Lowell, Riverside, Taylor and Tope Elementary schools and Palisade Junior-Senior High School.

The schools with indoor gamma radiation levels of .1 or more would have to be classified as unsafe, based soley on the surgeon general's guidelines. They are Central High, Bookcliff Junior High, the old Grand Junction Junior High, Lincoln Orchard Mesa Elementary, Nisley Elementary, Orchard Mesa Junior High and Pomona Elementary.

The remaining tailings schools in the intermediate gamma range of .03 to .1 are probably safe or possibly unsafe — take your pick — and show the widest range of readings.

Those schools are Clifton, Emerson and Lincoln Park elementary schools, Shelledy Elementary at Fruita, the Vocational School on North avenue and Dist. 51 administrative offices.

Those working with radiation and exposure caution against taking radiation guide figures at face value, however, especially for limited exposure periods.

As a general rule, the guides are based on Murphy's law — if anything can go wrong, it will — and the guide exposures are set so low as to almost preclude any chance of genetic or health damage.

They are predicated on a standard assumption of 24-hour-a-day exposure to that particular level of radiation distributed over the entire boyd period of 30 years.

In effect, even students or faculty members exposed to perhaps double the maximum permissible level of gamma radiation in the classroom would have almost zero chance of suffering any immediate or future harm from it.

It would take about 240 school years exposure (six hours a day, 180 days a year) to the maximum guideline figure of .1 mrh to receive the total radiation dosage on which the guideline is based.

It's Time to Evict Grand Junction's 'Radon Daughters'

THE DENVER POST Sunday, Oct. 24, 1971

West Slope City's Residents Endangered

By STEWART UDALL and JEFF STANSBURY

GRAND JUNCTION, Colo.—Long criticized for its lack of vigilance on radiation hazards, the Atomic Energy Commission (AEC) has snarled itself in a major new public health scandal.

Perhaps you have read about the radiological fate of Grand Junction. During the 1950s, in this valley town and in other mining towns throughout nine Western states, the AEC promoted and bankrolled a uranium mining boom. The AEC bought all the uranium for its own strategic stockpile, and it carefully regulated the mining, milling and use of this dangerous mineral.

Or so everybody thought, until 1966. In that year the Colorado Health Department learned that leftover "tailings" from uranium mills had been widely used as a construction "fill" material for homes, schools and other buildings in Grand Junction. The fine gray tailing powder emits radon gas which quickly decays into "radon daughters"—particles of highly radioactive dust.

Radon daughters have caused high rates of lung cancer among uranium miners in Europe and the United States. They may also damage human genes. At the University of Colorado Medical Center, researchers have found evidence of chromosome breakage in Grand Junction infants. It is too early to tell if exposure to tailings is causing cancer—but every one of the estimated 4,000 Grand Junction homes surrounded by tailings has radon daughter levels well above the U.S. Public Health Service's recommended minimum.

LAST MONTH, the Inter-Agency Committee for Indoor Radon Study met in Denver to grapple with the emergency. By a 4-3 vote, it called for prompt removal of the hundreds of thousands of tons of tailings which have been deposited near Colorado homes. The committee's six-man medical board charged the federal government with responsibility for the tailings.

Significantly, the two AEC representatives voted against the committee's decision. The AEC and former AEC officials who now control radiation policy for the Environmental Protection Agency (EPA) disclaim any responsibility for the tailings problem. And therein lies a 10-year tale of public disservice on the part of the AEC.

A forthcoming issue of the New York Times Sunday Magazine will carry a disturbing account of the AEC's role in the uranium tailings tragedy. Written by Dr. H. Peter Metzger, a Boulder, Colo., biochemist who has investigated the AEC for three years, it is essential reading for anyone who wants to know the full story of this fiasco.

Here are Dr. Metzger's findings:

—Although its spokesmen expressed surprise at the Colorado Health Department's discoveries in 1966, the AEC had known for at least three years that tailings were being used by home builders. County health officials had written the AEC for advice on this problem in 1963. The agency did not respond. In 1964, its officials attended a U.S. Public Health Service meeting in Cincinnati, where they were reminded that uranium tailings had been used in homes and children's sandboxes.

—Before 1966, the AEC acknowledged its responsibility for the ultimate disposition of tailings, stating that they were an integral part of the uranium mill process which it regulated. After 1966, however, the AEC denied any responsibility. Why? Dr. Metzger says the agency had found, to its utter dismay, that the bill for the safe disposition of a tailings pile it had accumulated in Monticello, Utah, was a whopping $300,000.

—The AEC desperately tried to thwart every health investigation of the tailings problem after 1966. In that year, it sabotaged the Colorado Health Department's bid for government study funds, arguing that the radon daughters in Grand Junction could be attributed to "background" radiation. This year the AEC refused to back the chromosome investigation mentioned above.

—Finally bowing to public pressure, the AEC now recognizes the tailings problem but says it wrote the nine uranium states about it 10 years ago. Dr. Martin Biles, director of AEC's division of operational safety, claims a letter was sent to state health officials in 1961 advising them that "the radium content of these tailings may be such as to warrant control." Miraculously, this letter has vanished into thin air. None of the state agencies it was allegedly sent to can find a copy.

THIS RECORD of duplicity and indifference to public safety would be more shocking if we had not heard it before—over the appearance of radioactive iodine in milk during the 1950s and over the fate of the 6,000 men who worked the uranium mines. The AEC sent these men into the mines *knowing* of the high lung cancer rates such an occupation had induced in Europe. Because of the agency's disregard for the risks, said Dr. Charles C. Johnson of the U.S. Public Health Service, "600 to 1,100 of these miners will die of lung cancer" in the next 18 years.

Consistently, the AEC's response to such disclosures is: "It's not our fault." This agency, along with EPA, will not accept responsibility for removing the tailings—a job which the AEC's own engineers say is feasible. As a result, some 15,000 Grand Junction residents and the unsuspecting people of other uranium mill towns must go on living with their deadly radon daughters.

We believe Americans—especially those whose lives are threatened—have the right to insist that their government perform a simple act of sanity. All of the tailings should be removed forthwith at federal expense.

Los Angeles Times

Stewart Udall is a former secretary of interior and Stansbury is his assistant.

ETHERTON Realty
RAYMOND E. ETHERTON
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MEMBER MULTIPLE LISTING SERVICE
415 NORTH AVENUE • GRAND JUNCTION, COLORADO 81501

Oct. 18th, 1971

To whom it may concern:

Regarding questions on "radon", there rightfully should be very few through my office, considering the rather low flow of activity.

Just to-day, there was a request, or condition of an offer to purchase, in connection with one of my listings, that clearance should be obtained regarding "tailings", as a condition of purchase.

This, I think, is begining to be the regular and accepted practice. Where present, and verified by count, it can very definitly become a big problem.

Very truly yours,

Raymond E. Etherton,
Realtor-Broker.

RANKIN and COMPANY Inc.

768 NORTH AVENUE - RANKIN BUILDING
GRAND JUNCTION, COLORADO

PHONE 242-6540
ZIP CODE 81501

FARM AND RANCH LOAN AGENTS
LIFE INSURANCE AGENTS
MUTUAL LIFE INSURANCE COMPANY OF NEW YORK

INSURANCE
APPRAISALS
REAL ESTATE
DEPARTMENT

October 14, 1971

Dear Pat:

In answer to your letter requesting information for the Radon gas presentation I will try to give you some information from our office.

On October 1, 1970 I wrote a lease on a building at 309 Pitkin for one year, for the Laser Data Corporation--Vernon R. Gatley, President. Now it looks like they will not take up their option even though they like the building and the location suits them, and they had plans to build on to it as soon as they bought it, even planning to possibly buy it earlier this year. I have exhausted all sources of any good news, for Mr. Gatley has undergone many X-ray treatments and is afraid the combination will do him constant harm. Climax Uranium sand was put in after a house was torn down and the cement slab poured on top of it.

Chuck Emmons had a contract on a listing of mine where the people requested the radon count. I got it for him immediately, but he held it, although even the letter said the count in the garage was the highest, but the count was low on the house. He thought they would be more convinced if he held it a few days until other conditions were met and then showed it to them. He also used it to get the owner down in price, for I was with him all the time. However, it was written in the contract and gave the buyers an out, and because he gave the owner the feeling he could overcome it the owner had wasted a lot of time and all so money doing something else according to her plans.

Questions seem to follow the newspaper articles, which seem to contradict the one before.

Seems like the main question is whether we should have the owner of a property get a Radon count when we list the property, and show it, or should we keep still and furnish a count only if we are asked for it.

Sincerely,

Marge Tucker

RANKIN and COMPANY Inc.

768 NORTH AVENUE - RANKIN BUILDING
GRAND JUNCTION, COLORADO

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FARM AND RANCH LOAN AGENTS
LIFE INSURANCE AGENTS
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INSURANCE
APPRAISALS
REAL ESTATE DEPARTMENT

October 18, 1971

Dear Mr. Gormley:

In regards to the radon gas problems, I have had several cases which have come up to make difficult situations in my business as a real estate salesman.

One two occasions, I have attempted to list homes. The owners have been reluctant to list their homes, as they had prior knowledge of a high level of radon gas. I did not list these houses. In both cases, the main concern of the owners was whether or not their homes would be fixed at the expense of the AEC, who allowed people to use the tailings. This I could not answer, nor give them advise concerning their liability should they put their home up for sale.

On three occasions, I have had buyers of property request a clearance from the health department. On many occasions, I have had people from other sections of the country question me concerning the radon gas problem. I was unable to give them specific and correct information as up until the past few weeks, no specific information has been given. The information which has been sent to owners of property still does not give the real estate people conclusive answers.

Sincerely,
May Slusher
May Slusher , Saleswoman

The main things I see to have established is that the government (AEC) agency which let the tailings be used, be held responsible for their mistake - that simple!

REALTOR MEANS PROFESSIONAL SERVICE

Hill Realty

317 Rood Ave. -:- Phone 243-2750

GRAND JUNCTION, COLORADO

GRADUATE
REALTOR
INSTITUTE

Oct. 13, 1971

We have several instances in which the prospective buyer has requested information as to radon emmission from a property. These people were not as much concerned from a health standpoint as they were as to resale value.

There seems to be much doubt that the radon emission is sufficient to damage health, and since the tests at presnt are not able to definitly establish a health problem, it would seem to me that the present problem from a real estate standpoint is damage to sales value .

Almost all the clients I have served in the last year have requested the health department tests to determine the radon emission problem. I know of several properties at present still on the market which have had sales contracts revoked because of the possible presence of radon emmisions.

I feel that the government is responsible for the damage from a sales value standpoint . They have raised an issue for which at present does not have sufficient evidence to support the health damage theory . If such health damage possibility does exist once again the responsibility is with the government .The use of tailings or any other radioactive material in and around buildings should not have been allowed until proper tests had been made.

Yours truly

W. B. Hill

October 18, 1971

Ray Etherton Sec'y
Multiple Listing Service
Grand Junction, Colo.

Dear Ray:

Agreeable with your suggestion, we are writing you regarding our experience with customers who have made the radiation that might exist at a property an issue in the sale.

In the sale of the property at 410 - 29 Road, Grand Junction, Colo., Robert L. Anderson and Katherine J. Anderson requested a copy of a letter from the Health Department showing the Gamma Ray reading before they would close the sale. This sale was completed on July 2, 1971.

The sale of the property at 571 - 30¼ Road, Grand Junction, Colo. was conditioned on the furnishing of a letter from the Health Department also. This was from John Wood and Pearl Wood to Willis C. Ball and Noemi Ball. This sale should close this week. I might add that some radiation was shown under the garage floor slab, but they felt it was not enough to be significant.

I notice in your bulletin today that Mesa Federal Savings & Loan Ass'n is going to require a copy of the letter from the Health Department on all their loans. I assume that they will decide when it has reached the level that could be dangerous. This will be the greatest service that they could perform. In talking with people about the problem, fear of the unknown quickly comes into the conversation. Until definite guide lines are established, this fear will continue to exist. I think it is a shameful thing when a governmental agency trades on this to build a bureaucratic empire.

Sincerely yours,

Madden Realty

Otis C Madden