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Nuclear Report *from* Taiwan

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MIN SHENG VILLA:

Residents' Unprecedented Radiation Exposure Attracts International Attention

It was mid-August, 1992, the Liberty Times newspaper received an anonymous letter stating that a building on Long Chiang Road in Taipei contained irradiated steel reinforcing bar (rebar). One case of radiation-contaminated housing had been discovered in Taiwan two weeks before, at the Taiwan Power Company's dormitory on Hsiamen Road, but it was thought to be an isolated case. After receiving the letter, the Liberty Times reported on August 15th that an unknown building on Long Chiang Road also was suspected to be contaminated. Accompanying the article was a picture of Long Chiang Road. The article, however, brought no response from the government.

Because Min Sheng Villa could be clearly seen in the photo, some residents called the Atomic Energy Council (AEC), which is responsible for overseeing all nuclear activities in Taiwan. The AEC responded that this was purely a rumor and suggested that the residents contact a private radiation detection company if they really wanted to investigate.

Following no action by the AEC, Liberty Times reporter Peng Guo-wei on August 21 borrowed a Geiger counter and went to Min Sheng Villa. In the halls and elevators, he discovered excessively high radiation levels. Peng's report the following day finally instigated the AEC into sending inspectors. (Peng's initial story and his follow-up investigation have won him numerous investigative reporting awards in the last year.) Thus, radiation in Min Sheng Villa was officially "discovered" on August 22, 1992. Its discovery by an outsider and the government's unwillingness to face the problem reflect the bizarre nature of this whole case.

Min Sheng Villa: Taipei's "haunted house"

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Min Sheng Villa's rounded balconies and spacious apartments sit not far from the booming financial district of Taipei, an ideal location. Offices occupy the bottom floors, while the upper floors are spacious middle class apartments. One writer has described the Villa as "the epitome of the middle-class Taiwanese dream." But since the irradiated housing problem exploded on Taiwan last year, Min Sheng Villa has been the focus of much controversy, while the lives of the residents inside have been turned upside down.

Min Sheng Villa is not just the most serious of the radioactively-contaminated buildings discovered in Taiwan in the last year; it is the most serious such case in the world. And retesting of certain apartments in late August showed that the radiation is more serious than originally measured; readings for one apartment were ten times higher than the original recording. Out of 70 apartments in the building, 34 were determined to have what the AEC determined to be "excessive radiation levels," measured at 1.5 rems/year. Radiation levels in the apartments reach up to 7 rems/year. (The international safety standard as set by the International Council on Radiation Protection (ICRP) is 0.1 rems/year.) Because radiation decreases with time, levels were four times as high when the building was constructed nine years ago.

Never before in history have people been exposed to comparably high doses of radiation over as long a period of time as have the residents of Min Sheng Villa. A team of Japanese nuclear medicine doctors who were recently in Japan compared what the Min Sheng Villa residents have faced to the 1986 Chernobyl accident in the Soviet Union. Japanese radiation testing expert Itotsushi Hiroshi says it would be equivalent to living through 70 Chernobyl-magnitude accidents at the 30 km evacuation area boundary.

Residents Look to Japan for Help

Believing that the medical examinations provided by the AEC were incomplete and the results altered, on October 6th a group of 8 children and 5 adults from Min Sheng Villa went to Japan to begin a series of examinations that may last up to thirty years. Radiation sickness experts from the Hannan Chuo Central Hospital in Osaka and the Hiroshima University Atomic Bomb

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MESSAGE FROM THE PUBLISHER

Japan's Use of Plutonium Endangers the World

by Jun-yi Lin, ANCT President

The Anti-Nuclear Coalition for Taiwan firmly opposes the expansion of Japan's use and transport of plutonium and the opening of the Monju Fast Breeder test reactor.

In developing plutonium-generated nuclear power, Japan is taking a course which most developed nations have rejected. Although the Fast Breeder reactor was once looked upon as a more efficient form of energy production, no fast breeder reactors are operating commercially in the West - mostly because of the dangers of plutonium.

Plutonium is the most poisonous, dangerous substance on earth. Created by man, the risk potential of using plutonium is beyond the understanding of current science. Its potential dangers are immense.

In experimenting with plutonium, Japan is putting not only its own citizens at risk, but also those peoples of the nations which border the sea routes Japan uses to transport plutonium. Although the ship Akatsuki Maru last year carried just 1.5 tons of plutonium from France to Japan, its potential harm to humans was equivalent to the damage created by fifteen Chernobyl accidents. (Just four kilograms of plutonium is necessary to make a nuclear bomb.) Likewise, a serious nuclear accident at a plutonium reactor in Japan would pose great harm to neighboring countries in East Asia.

Plutonium is not a solution to the problem of nuclear waste disposal. When spent uranium fuel is reprocessed, only a minute amount of plutonium is produced. The remainder remains highly-radioactive nuclear waste, demanding safe disposal.

This illusion of disposability by reprocessing threatens to deceive developing countries which are considering ways to increase their power supplies, but can't deal with the technological and management demands of nuclear waste.

Japan's use of plutonium threatens the stability of the political structure in East Asia. Plutonium is the principal explosive in nuclear bombs. The commercial use of plutonium always carries the risk that plutonium will be diverted for use in making nuclear weapons. Japan no doubt hopes to gain an equal footing with neighbors China, Russia and North Korea, all possessors of nuclear weapons and all historical enemies of Japan. Japan's gaining nuclear weapons will not ease relations, it will only increase the potential harm to come from them. Japan should continue to use its economic success, not military threat, to influence international affairs.

The danger is not just in the threat of plutonium being used by the government that owns it. If even a small amount of plutonium fell into the wrong hands through loss, theft or bribery, it could be used by terrorists to blackmail governments. Any nation that chooses to use such a powerful, dangerous substance also must accept the responsibility for what happens to it.

The development of the use of plutonium for nuclear energy is a disturbing contradiction for Japan, a country which has peace articles written into its constitution, and which, of all countries, should understand the immense dangers of nuclear energy. As other countries have done, Japan must recognize that plutonium has inherent dangers beyond our control, and that its commercial use is inseparable from those dangers. We urge the government of Japan to respect the wishes and safety of its people and those of other countries, and halt the development of this dangerous form of energy.

Korean and Japanese members of the No Nukes Asian Forum visited Taiwan in September to attend conferences and observe plans of the No. 4 nuclear plant. Here they view plans of the plant

Nuclear Report from Taiwan

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We are very pleased to have been informed that South Korea will host the No Nukes Asia Forum, 1994. No date or other details have been announced yet, but we will try to keep our readers abreast of the schedule. For more information, readers may contact:

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This summer, ANCT received from Greenpeace a large packet of valuable information on nuclear issues in Asia. This is a very effective way to support organizations like ourselves, and we are grateful to Greenpeace for sharing their resources with us. Thanks and keep up the fine work! ☮

13 Tons of Lost Rebar: The Tip of the Iceberg?

GUAVA ORCHARD SEARCH SHOWS SOME IRRADIATED REBAR WAS NEVER BURIED

The search for the source of the irradiated rebar which contaminated Min Sheng Villa and other buildings in Taiwan has led to a guava orchard on the northern outskirts of Taipei, where the AEC conducted a search in early October for nearly 30 tons of irradiated rebar discovered during the early 1980s was supposedly buried.

A series of revelations in the last year has shown that the Atomic Energy Council (AEC) knew of the existence of irradiated rebar ten years ago, but deliberately did not make it public. Suspicion that part of the 29.9 tons of irradiated rebar had never been buried and had been sold back into the construction market caused the AEC to investigate, tracing the rebar to the guava orchard, formerly a waste metal burial site which belonged to the Jin Shan steel Company. Excavations began on October 5, and finished three days later with only 14 tons of irradiated rebar found. This result confirmed suspicions that 12.66 tons of irradiated rebar which were discovered in 1983 disappeared from their storage site in 1984, and that the Jin Shan Steel Company and the AEC officials falsified documents indicating that the steel had been buried. Several officials involved in the case have recently been impeached for their cover-up of the Min Sheng Villa case in 1985.

Although it is unlikely that the irradiated rebar used in Min Sheng Villa came from the same batch of Jin Shan rebar - the Min Sheng Villa radiation levels are far higher - the cover-up of the Min Sheng Villa case in 1985 is probably related to the missing Jin Shan rebar. The officials who terminated the Min Sheng Villa investigation were probably afraid that their loss of the stored contaminated rebar the year before would be found out. Thus one mistake led to another, and became a series of misjudgments, cover-ups and denials which are still seen today in the AEC's treatment of the Min Sheng Villa case.

The First Discovery

In March, 1983, as a truck carrying rebar for construction passed through the gates of the #1 nuclear power plant, a radiation detection alarm sounded, causing workers to initially assume that there was a leak in a nuclear reactor. Instead, they found that it was the rebar on the truck which had triggered the alarm. This was the first discovery of irradiated rebar in Taiwan.

The irradiated rebar on the truck had nothing to do with nuclear operations at the power plant; it had just been shipped from the Jin Shan Steelworks in Taoyuan. Tracing of its source led the AEC in 1983 to Tien Mu in northern Taipei, where rebar from the same batch of Jin Shan steel was being used in the construction of a dormitory of the International Commercial Bank of China. The unfinished 5-story building was found to contain steel on the 4th and 5th floors that was contaminated with radioactive Cobalt-60 emitting 5-8 millirems per hour of radioactivity. The top three floors were then demolished, and 17.2 tons of irradiated rebar removed from the structure.

On the construction site were an additional 12.66 tons of brand-new radioactive rebar, measured at 5 mrem/hr. This rebar was removed to the Jin Shan company's factory site. On March 26, 1983, Jin Shan signed a commitment not to sell or remove this irradiated steel, and it was arranged that the AEC would inspect it every six months until permanent disposal could be arranged.

Out of Sight, Out of Mind

But on the inspectors' second visit to the steelworks, in May, 1984, the rebar had disappeared. Jin Shan worker Yeh Wen-chang informed the inspectors that the steel had been sold. The next day, AEC Radiation Protection Division director Yang Yi-chin ordered Jin Shan to find the missing rebar and get it back within one week. In the letter, Yang also warned Jin Shan not to publicize that they had sold irradiated rebar, "in order to protect Jin Shan's business reputation."

The batch of steel was never found. However, when Jin Shan responded to the AEC on June 12, 1984, their letter explained that the rebar was old and the exterior severely rusted. Therefore, the company had buried the rebar at a disposal site on Cheng De Road in Taipei because they were "afraid that the rebar would be re-used by unscrupulous people." Without demanding further evidence that the rebar had really been buried, the AEC accepted this explanation and closed the investigation.

The other batch of 17.2 tons of irradiated metal which was removed from the bank dormitory is reported to have been shipped directly to the same site on Cheng De Road and buried there.

These events occurred without any exposure in the media. To avoid hurting Taiwan's steel exports, and stirring up public fears of irradiated rebar, the AEC officials confidentially handled and closed the case. It was not until 1988 that the story was exposed in the newspapers, but even then it failed to attract much public attention or response from the government. The Jin Shan Steelworks went out of business in the mid-1980s, so company records can't be consulted to clarify the story.

The inspector who investigated the Jin Shan irradiation case was the same person who the following year discovered and investigated high background radiation readings at the dentist's office in the Min Sheng Villa. And in both cases it was his supervisor, former Radiation Protection Division chief Yang Yi-chin, who terminated the investigations. In this may be the answer to why the Min Sheng Villa case was never publicized: it would have exposed Yang's and the AEC's mishandling and cover-up of the lost irradiated rebar the previous year.

Yang and two other AEC officials - the former secretary-general and the head of the Radiation Medicine Division - were impeached in September this year for their breach of responsibility in the Min Sheng Villa case, and are still awaiting punislunent.

Inevitable questions still plague the case: Was this the source for the irradiated rebar discoveries today? Why wasn't the rebar shipped to Orchid Island for disposal, as other low-level radioactive wastes are? Was the rebar sold, melted down and converted into pipe fittings which were sold to the U.S. in late 1984, only to be returned to Taiwan when U.S. customs officials discovered excessive radioactivity? Or were those separate cases, in which case the scope of the irradiated steel in Taiwan would be much wider? How much irradiated rebar was sold into the Taiwan market?

And, of course, how did radioactive material get into Taiwan steel in the first place? The majority of steel produced in Taiwan is made from imported scrap metal - most of it from the United States. Although the U.S. has strict checks on imported metal, its standards are comparatively lax on the waste materials it exports.

(continued on page 4)

Tip of the Iceberg *(continued from previous page)*

There is some speculation that the source may have been a shipment of waste metal that Jin Shan received from the U.S. by way of Korea and Japan (at the time, Taiwan had no radiation checks on imported steel), but this connection is difficult to prove.

As of July this year, steel companies in Taiwan are now required to test scrap metal for radiation, and random checks have been initiated on imported scrap metal.

Following the failed search in the guava orchard for the lost 12.66 tons of rebar, AEC Assistant Chairman Wang Man-chao admitted that the AEC never really had much hope that the rebar in question would be found. He also stated that the Council will be investigating the case to find out how many officials knew of the cover-up and if bribery was involved.

Residents near the Cheng De Road orchard complain that they were never informed of the storage of radioactive materials near their homes. Resident Lin Hong-chang said, "If the AEC can't give the public a reasonable explanation, the government's credibility will suffer."

In the last year, that's become a common sentiment in Taiwan.

Taipower Worker Contracts Bizarre Disease

POSSIBLE LINK TO RADIATION EXPOSURE INVESTIGATED

A formerly obscure man named Yeh Ding-chuan has been lifted to a measure of national attention since news of a strange disease he acquired reached public ears this August. Six years ago, Yeh was a perfectly normal person who worked as a maintenance man. Today, he can neither walk nor speak, cannot think clearly, and will probably never work again. The best doctors in Taiwan have not been able to diagnose his condition.

Yeh's disease, while unusual, would doubtless have gone unnoticed by the public except for one important fact: Yeh's maintenance work was all carried out in the reactor buildings at Numbers 1 and 2 nuclear plants. Based on the Taiwan Power Company's work records and Yeh's own memory of his duties, he was responsible for cleaning and repairing work in various places around the reactors, including waste water pipes, waste gas facilities, reactor rooms, and turbine rooms.

Yeh, who hasn't been able to work since 1986, spent a good deal of time during 1987-1990 visiting major hospitals around Taiwan, trying to discover the cause of his illness. His family suspected that radiation exposure had played a role, but none of the doctors who examined him has ever committed to this kind of diagnosis. The best they have been able to do is to suggest that Yeh has Parkinson's disease. Victims of Parkinson's disease exhibit symptoms similar to Yeh's: slow, stiff movements, difficulty in standing and walking, stooped posture and staring facial expression.

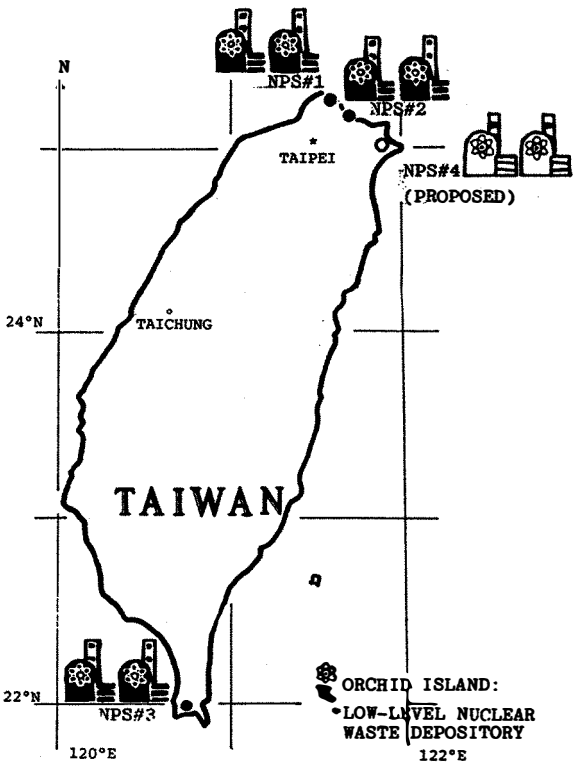
At the end of this August, Yeh received a letter from Taipower telling him to take a month's vacation and informing him that after this vacation he would be laid off. His parents, fearing that Taipower would cut off Yeh's health benefits, and frustrated by the lack of progress in diagnosing their son's illness, sought assistance from their Legislative representative, Ong Jin-ju.

With Ong involved, the AEC finally got involved in the case, visiting Yeh's home, and arranging for a blood analysis and hospital examination.

Before blood test results were completed, Taipower released statements rejecting the possibility that Yeh's disease was caused by radiation exposure, saying that according to its records Yeh's total external exposure over the four years he worked in radiation areas only adds up to 1.3823 REMs, far below Taipower's safety standard of 5 REMs/year. The release also stated that Yeh had received absolutely no internal exposure, although the company provided no technical information on how it had checked this. Taipower further pointed to the fact that nothing in the medical literature identifies radiation as a cause of Parkinson's disease.

Legislator Ong quickly issued a scathing response to Taipower's claims in which he accused the utility of trying to escape responsibility in Yeh's case. He reminded Taipower that none of the doctors who have examined Yeh had definitively diagnosed his condition as Parkinson's disease, and that it was therefore disingenuous for them to conclude that radiation had played no part in Yeh's condition. Ong also threatened that unless Taipower moved quickly to improve safety conditions at the nuclear plants, he would continue to "pull open the curtain" on the company's already tarnished safety record. Ong alleged that Taipower has a little-known rule: only workers who have previously had children may work in the reactor buildings. If true, this certainly testifies eloquently to the level of danger encountered by these workers.

On September 30 the AEC released the results of Yeh's blood testing. The Nuclear Research Institute, which conducted the testing, said that their analysis detected no trace of radiation contamination. There have been, however, no independent tests to confirm this result; NRI has the only lab in Taiwan with the equipment needed to perform the kind of analysis Yeh required.



NUCLEAR POWER STATION(NPS) LOCATIONS IN TAIWAN

(PYL/ANCT)

Min Sheng Villa Attracts International Attention

(continued from page 1)

Radiation Medicine Research Institute have offered to assist the Min Sheng Villa residents in part because they feel the government of Taiwan has done little to protect the residents' health. The Japanese doctors and other nuclear experts also view Min Sheng Villa as a unique research opportunity. Min Sheng Villa residents' spokesperson Mr. Wang Yu-ling says, "There is no record in the world of human beings exposed to accumulated radiation for so long. There have only been experiments with white mice and rabbits. Now we are Taiwan's white mice."

Effects of radiation exposure do not make themselves clear immediately; they often take decades to appear. The complete effects of living in Min Sheng Villa will not be known for decades and even generations.

The international attention has been welcomed by the Min Sheng Villa residents, who are confronted with a much different attitude in Taiwan. When the Min Sheng Villa case first broke, the AEC tried to reassure the residents that the radiation was minor. But as the story developed, it became more and more obvious that wasn't so. The highest dosages over nine years in the Min Sheng Villa exceed ICRP "lifetime" dosage guidelines by nearly 20 times! Professor Murata Saburo of Japan's Nagoya University estimates that accumulated radiation exposure in Min Sheng Villa is so high that cancer cases will increase at least 50% in the next few years.

The Japanese doctors who have visited Min Sheng Villa were shocked that the people are still allowed to live in the building. They could not comprehend why the government would not respond more quickly to protect its people. Said researcher Uonuma Akiko, "Our test results didn't vary much from the AEC's. But...why are those residents still living there?"

Treatment from the AEC

Since last September, when Min Sheng Villa residents received medical exams from Taipei's Veterans General Hospital, the residents have received virtually no assistance from authorities, according to Wang Yu-ling. Not until this October, over one year after the case was discovered, did the government offer to assist with evacuation - but only to the eight apartments whose accumulated 9-year dosages total over 50 REMs. (The international lifetime standard as set by the ICRP is only 7 REMs.) The others have literally been left to fend for themselves. Of the 34 contaminated apartments, only 18 have moved out. And one family had to move back in because they couldn't afford the outside rent. For this reason, legislators Lin Cheng-jie and Yeh Ju-lan call on the government to ensure that the building is evacuated. Says Lin, "Radiation is a matter of life and death. The AEC should immediately forbid the sale of irradiated homes, and provide Min Sheng Villa victims with accommodations to enable them to evacuate."

> "There is no record in the world of human beings exposed to accumulated radiation for so long. There have only been experiments with white mice and rabbits. Now we are Taiwan's white mice." - *Min Sheng Villa resident Wang Yu-ling*

The 50-REM minimum standard to give evacuation assistance includes only the eight most seriously-contaminated apartments, and has the residents association angry, especially since many apartments fall in the 40-49 REM range. They feel the 50-REM standard is a continuation of the AEC's setting of 1.5 REMs/year as the minimum level to be considered "dangerous" and eligible for compensation: both levels far exceed ICRP international standards, which recommend that radiation exposure for civilians not exceed 0.1 REMs/year. The Min Sheng residents claim that the two standards are arbitrary, illegal and another way for the AEC to avoid full compensation responsibility.

The residents are asking for fair compensation for their homes from which they must move out and medical protection for the health dangers they face. Emphasizes Wang, "Most important is lifetime medical coverage, because the residents will live under the shadow of irradiation for the rest of their lives."

The Min Sheng representatives and the AEC spent many months trying to negotiate a compensation settlement. But the two parties could not agree on one main point: the AEC insisted that when residents accepted the sale of their houses, they had to give up the right to sue the AEC and its officials for future damages. Facing a future of potentially enormous medical costs, and increasing evidence that the AEC had prior knowledge about the radiation but covered it up, the residents stood firm. In April, the AEC finally gave the residents an ultimatum: accept our offer or we won't offer again to buy back the houses. Just six of the 34 eligible families accepted.

A frustrated Wang Yu-ling states: "At present, our government still maintains the attitude that when they are clearly at fault, they still refuse to admit their errors."

The contract clause forbidding future legal action toward the AEC and its officials is the crux of the whole dispute. The AEC is afraid of future lawsuits because of revelations that have shown that high-ranking AEC officials knew in 1985 that the Min Sheng Villa rebar was irradiated but failed to notify the residents.

One Lie Leads To Another

In March, 1985, AEC inspectors were called to perform a routine examination of an X-ray machine which was being installed in the Chi Yuan Dental Clinic in Min Sheng Villa. But before the X-ray machine was even turned on, the inspector's Geiger counter began giving off abnormally high readings. The Cobalt-60 radiation was coming not from the machine but from the walls. When officials went next door to check, they also found high radiation levels from within the walls.

When this was reported to the AEC Medical Applications Section director Mr. Chang Hsiao-chien, and then to Radiation Protection Division chief Yang yi-chin, Yang ordered that no follow-up check be done so as "to avoid trouble for the Council." The AEC then recommended the dental clinic to lead-plate and re-plaster the X-ray room walls. There was no investigation done of the rest of the building, nor were residents notified of the radioactivity.

This occurred even though - or perhaps, because - the previous year, Yang had supervised a case in which rebar contaminated with Cobalt-60 was suspected of mistakenly re-entering the construction market *(see accompanying article on page 3)*.

Two more times, in 1988 and 1992, the Chi Yuan clinic's X-ray machines received AEC inspections. In both cases, the reports showed no mention of excess radiation, indicating that they must have been falsified. In the 1992 instance, Chang Hsiao-chien, who had terminated the 1985 investigation, personally inspected the clinic. Last month, Chang, Yang and former AEC secretary-general Li Yu-hao were impeached for their roles in covering up the Min Sheng Villa radiation and subjecting the residents to an additional eight years of potentially-fatal exposure. (Yang and others also are under investigation for involvement in the cover-up of rebar lost in 1984.)

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The Min Sheng Villa Story (continued from page 5)

The impeachment has given encouragement to the beleaguered victims in Min Sheng Villa, who on August 30 petitioned Premier Lian Chan with three requests:

1) For assistance to move out of the apartments
2) Order AEC chair Hsu Yi-yun to publicize the truth of the entire irradiated rebar story
3) Officials responsible for the problem because of their breach of duty should be actively prosecuted by the law, without waiting for private parties to file suit.

The government refuses to grant the residents' demand for lifetime medical insurance, even though the long-term radiation effects are the result of AEC mistakes. The Council sticks to the argument that they will provide whatever compensation is dictated by law, and are content to wait while the case is decided in court. But in the meantime, the residents are stuck inside their irradiated homes, receiving no compensation and no protection.

Wang Yu-ling sees a reason behind the government's disregard of their problem: "I feel the government, in order to protect nuclear power generation, tries to cover up all the dangers of radiation. In fact, the effects of radiation are extremely serious, but there is a serious lack of publicity and education on atomic energy issues. The people have almost no understanding of what radiation danger is. Even funnier is that all of our education on environmental and nuclear danger comes from environmental and victim's support groups. I believe that a responsible government should not allow this kind of situation to occur."

At the heart of the conflict are two opposing views. The technical experts in the AEC analyze the situation from a rational, scientific point of view. Regarding the residents' medical situation, the experts adopt the scientific analytical method: unless the medical problems can be proven related to radiation, then the government does not have to act. The residents, of course, don't see it this way. They tend to look at the "worst possible case" scenario, and feel if the government can't prove that their health problems are not due to radiation, then it should be assumed they are. The residents know they were deliberately misled, that the government knowingly did not inform them of the dangers in their homes. In their minds the government should assume full responsibility for the physical, psychological and financial harm that is the result of living under radiation exposure for nine years.

> "If they don't trust the government and hospital reports, they can move to another country." - *AEC Chairman Hsu Yi-yun on Min Sheng residents.*

One reason why the AEC is unwilling to fully and promptly compensate Min Sheng Villa is because there are other irradiated buildings which could also file lawsuit against the Council; if the AEC grants Min Sheng Villa full compensation, including lifetime medical insurance, they could end up having to provide similar deals for hundreds of other citizens. Nobody knows how much irradiated steel got into the Taiwan market, nor just how many buildings are built with it. Clearly, the financial implications could be enormous for the AEC. But it is here where the Administrative Yuan, of which the AEC is a part, should move to allocate funds to fairly compensate the residents.

The facts make it clear that the AEC's negligence on at least two counts make it directly responsible for the residents' fate. One, in the early 1980s, the AEC lacked proper standards and controls on irradiated steel and other radiation sources. Two, the Council knew of Min Sheng Villa's radiation in 1985 and covered up the case. The council's mishandling, whether deliberate or not, exposed the residents to eight more years of radiation danger. Consequently, any attempts to avoid their responsibility to compensate and protect the residents are unjustifiable and immoral.

Professor Bi Heng-da, director of Taiwan University's Architecture and Urban Research Center, wrote in a recent article, "Because this is the first case of its kind in Taiwan, there are no legal precedents and no applicable compensation laws. But this should not be used as an excuse by the AEC to evade their responsibility to protect the residents. Instead, the government should use this case as a model to develop a legal framework for radiation control and protection."

As to the other contaminated buildings, none is as serious as Min Sheng Villa. But their danger is that at least five - and some say many more - remain unidentified. The AEC has only announced the street the buildings are on, but not the address. Therefore, these contaminated homes may be bought and sold without any knowledge by the purchaser. The AEC is no doubt trying to protect the property values of these homes; announcing the locations would immediately drop their values. But in not informing the public, the Council may endanger public health.

The Residents' Private Agony

In the wake of this are left the people of Min Sheng Villa. Their tragedy is unique: in a modernized, developed country, they are ignored by their government and people, and left to swallow the realization that every additional day they spend between their walls increases their risk. Part of their pain is the uncertainty of not knowing when the effects will occur. We all know we're going to die, but for Min Sheng Villa residents, they are reminded every day that their lives and their children's lives may be cut short prematurely.

A recently-married young resident explains how "home" has come to have a different meaning: "I used to stay in with my wife and have candlelight dinners. After we found out about the radiation, we would go out. But staying outside doesn't work, either. You still have to go home and face the reality. Everyday I go home and stare at that irradiated wall, and think of what we should do. Our whole life is like this - entirely different from what we expected and imagined we would live like. At home, when we watch TV, our minds are on that irradiated rebar. The more we think about it, the more afraid we are. We also feel hate, and we want to rip out those steel posts."

One of the greatest fears for many residents is that when their children grow up, they will be unable to marry and have children of their own because other people won't want to risk marrying somebody whose health is a permanent risk.

A Min Sheng mother fears for her two sons: "We adults...if our chromosomes are damaged, it's okay, we're not going to have more children. The problem is with the children. Will they want to have kids of their own? Do they have to consider this question when they grow up? For their whole lives, they will have to live with that doubt."

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The group of Min Sheng residents which went to Japan will be followed by others. But some residents will not be able to afford the trip. Will continuing public attention force the government to treat the residents with the respect and compassion they deserve? Will they receive the complete, long-term medical attention and coverage that is their due?

(Parties interested in assisting Min Sheng Villa in any way may contact Mr. Wang Yu-ling through the Anti-Nuclear Coalition for Taiwan.) ☮

Radiation Sources: Out of Control?

Most of the time, radiation sources don't make for very good stories. They usually sit in bottles, reside quietly in scientific equipment, or as we will see, lurk in dry pits in open fields. It's only when you lose them that everyone suddenly becomes extremely concerned. Taiwan has been treated to three cases of lost radiation sources this year, and people are definitely concerned. Consider the following case:

On March 1, 1993 in Hsin Chu, a container of phosphorus-32 mysteriously disappeared from a truck belonging to the Feng Ji Scientific Instruments Corporation which was delivering radioactive materials to Ching Hua University. Feng Ji reported the loss to the Atomic Energy Council the next afternoon, and the newspapers quickly picked up the story.

Although P-32 is not highly radioactive and is used mainly as a tracing compound in plant and animal research, Feng Ji either did not know or did not report the quantity of material lost. Feng Ji and the AEC mounted a joint search, but after nine days of fruitless efforts they were upstaged by a Ching Hua University student who found the unopened container on Ching Hua's campus.

Unfortunately, the other cases of lost radioactive material which have occurred this year have not ended as cleanly as the above incident. Indeed, part of the problem is that they haven't ended at all; there are at least two cases in which radiation sources have disappeared without a trace. These two cases throw light on how the AEC has monitored and controlled radioactive substances and on how it has responded when things go wrong.

Anybody Seen Some Cesium?

On August 21 the newspapers reported that the Lian Cheng Steel Fabrication Company had lost two quantities of cesium-137 on August 10. The cesium was used in equipment which measures the volume of newly formed steel objects. In violation of AEC rules governing radioactive materials loss, Lian Cheng's management chose to search for the missing material itself rather than to inform the AEC immediately. It took a phone call from a disgusted Lian Cheng employee to finally bring the situation to the AEC's attention, ten days after the cesium had been lost.

Frantic searching by workers turned up one of the sources in a slag pile inside the factory. It is not clear whether the C-137 had been smelted out of the steel along with other impurities or had simply been lost intact in the pile. Workers were unsuccessful in locating the second source.

After the AEC was notified of the situation at Lian Cheng, they sent members of the Radiation Protection Division to the steel company to search for the remaining source. Both the AEC and Lian Cheng have stated that it is "unlikely" that the C-137 was lost outside the factory.

Inside the facility other members of the team were searching various equipment systems for radioactivity. Lian Cheng suspected that the C-137 had probably wound up in either the cooling system or the dust collection system, but searches in both systems came up with nothing. The AEC searched for the rest of August before calling off its efforts. Today, the lost C-137 remains unaccounted for. Lian Cheng officials now feel that the cesium somehow got into the 1600 degree Celsius electric furnace. Since C-137 turns to gas at 705 degrees Celsius, it seems likely that if the cesium had been in the furnace, it would have boiled away, releasing its radioactivity into the atmosphere.

The AEC has imposed some sanctions on Lian Cheng, including suspending its license to use radioactive materials, but this seems like a case of the plumber fixing the wrong end of the pipe; following proper procedures for managing these kinds of radiation sources would have prevented this amateurish accident from occurring in the first place.

The Pitfalls of Storing Cobalt-60

Another case to come to light recently is perhaps more serious, in terms of both the offender and the material; it involves the Army Chemical Warfare School's loss of a large amount of Cobalt-60 ten years ago. The lost source was 1000 times more radioactive than the Cesium-137 lost by Lian Cheng, and in 1983, when Taiwan was still under martial law, the Army was extremely secretive about its nuclear affairs. In fact, the public did not know anything about the case at the time it occurred.

The Chemical Warfare School, located in Taoyuan County in northern Taiwan, also conducts exercises in detection and cleanup of nuclear radiation. In these exercises, it uses 20 separate quantities of Cobalt-60, which range from "several" curies to "tens of" curies in strength, and are stored, each in its own dry pit, in an open field. When they decay past a certain point they are replaced with new ones. This job is the responsibility of the AEC's Nuclear Research Institute, which technically manages the sources for the Army.

In 1980, NRI determined from their records that the sources needed to be replaced, and they sent a team to the School to collect the old ones. To the team's surprise, they found only eighteen of the original twenty sources. The School and NRI immediately organized a search for the missing sources. In the process, they made some interesting discoveries.

One of the two pieces was located, although there are various conflicting stories as to where and how.

According to several people involved at the time, the second source was also found, but NRI technicians fixed its level of radioactivity at only one third of what their records indicated it should have been. Many people in the AEC came to the obvious conclusion: this second quantity of Co-60 was probably a substitute sent by the Army to close the case quickly. The Army, in response to media attention on this case, recently issued a statement claiming that keeping track of the Co-60 was the AEC's job, and that the AEC never reported any missing cobalt to the Ministry of Defense. The statement also maintained that the sources in question are not harmful to plants, animals, or humans. Experts at the AEC and elsewhere, however, said that such a large and powerful source would definitely harm complex organisms.

The different versions of how these quantities of Co-60 were lost and of who was responsible points to the AEC's lack of true regulatory control when dealing with the military. Indeed, an unnamed AEC official recently admitted that ten years ago, the AEC was a "paper tiger" where relations with the Army were concerned. Media sources have recently alleged that the AEC is still unwilling, or more frighteningly, unable to investigate what really happened to the missing cobalt. The only thing all sides agree on right now is that at least one source remains lost. There is a possible connection here to the Jin Shan Steel case (*see page 3*); the AEC suspects that since Jin Shan and the Chemical Warfare School are both in Taoyuan County, the Army's cobalt may have found its way into the Jin Shan rebar. The AEC admits, however, that it was so long ago that this hypothesis can never be proven. *(continued on page 8)*

Lost Radiation Sources *(continued from previous page)*

The Future

Although the AEC responded quickly to these cases, their actions only attack the surface of the problem. Taiwan needs an AEC with the power and the will to create a regulatory regime that can keep close watch on all the radiation sources this modern economy employs. If industry, or even the military, are found to be backsliding on safety procedures, or lose another source, the AEC should be able to unilaterally investigate the party in question and impose sanctions with real teeth.

There seems to be cause for hope, in the sense that under the gradual growth of political freedom here these cases have received a substantial amount of attention in the media. Some journalists have questioned the AEC's competence in controlling radiation sources, and called for the AEC to demand more power for itself within the governmental structure. Others have called for the AEC to open up information about past and current cases. At any rate, it will be more difficult for anyone to maintain an "out of sight, out of mind" attitude about this issue in the future.

IN THE NEWS

Japanese, Koreans Attend Protests Against Proposed No. 4 Plant in Yen Liao

A large protest conference against the building of the proposed fourth nuclear plant took place on September 29 at the building site of number four at Yen Liao in northeastern Taiwan. This protest, jointly organized by the Taiwan Environmental Protection Union (TEPU) and the Save Yen Liao Association, marked the first time that Taipower had welcomed anti-nuclear groups within the boundaries of a nuclear plant.

For several days before the conference, protest banners with anti-nuclear slogans hung outside the gate of the site, facing off with the Taipower logo.

Three Democratic Progressive Party (DPP) legislators present engaged in heated debate over safety issues with Taipower officials. They discussed recent discovery of deformed fish near outflow pipes at the existing plants, and also argued over what will happen when the Orchid Island nuclear waste storage facility, which is almost full, can finally accept no more waste.

The highlight of the conference, however, was the appearance of six experts from Japan and South Korea, who expressed the need for Asian anti-nuclear organizations to work together to fight the already fast-paced development of nuclear power in the region.

Suicide at No. 2 Plant Raises Questions

A security guard at the second nuclear plant in northern Taiwan was found dead by his own hand on September 14, almost 24 hours after he deserted his post with two revolvers and fled by motorcycle into the mountains. His body was found near the southern city of Kaohsiung, 200 miles from the plant.

Approximately 20 hours earlier, at around 3:30 a.m. on September 13, twenty-six-year-old Tang Wu-song took advantage of a shift change to steal two co-workers' revolvers and some ammunition. When his fellow officers realized that both the guns and Tang were missing, they immediately alerted all plant security units. At first it was feared that Tang might have gone crazy and tried to enter the plant operating room or other sensitive areas to damage equipment, but guards quickly discovered that he had stolen a company motorcycle and headed south into the mountains. He left no suicide note, but his actions seem to have been motivated by personal problems.

Framatome wins Taipower orders

The French nuclear power supplier Framatome recently announced that it has won two equipment orders from Taipower. The first involves the disassembly of the existing high level spent fuel facility at the third nuclear plant, and the second includes the design, manufacture, and installation of an advanced replacement facility. The new facility will incorporate design features which allow an increase in storage density, thus raising the limits on how much waste can be safely stored at the site.

Framatome also stated that part of the work will be subcontracted to Brand Companies Inc., a division of Waste Management Corporation, USA. Framatome's timetable calls for on-site construction to begin in late 1994, and sets the completion deadline in October 1995.

One obvious question which the news release did not address is what will be done with the waste currently stored at Number 3 while the new storage facility is under construction. According to recent media reports, the amount of waste stored at both Number 2 and 3 is quickly reaching maximum limits.

Another "Nuclear" Accident: AEC Head Deeply Embarrassed

Democratic Progressive Party (DPP) officials did not know what to think on the evening of September 28 at the party's seventh anniversary banquet when they received a package of flowers from AEC chairperson Hsu Yi-yun with a card reading, "Heartfelt Condolences In This Time Of Grief." Hsu has clashed with the DPP in the past, but nobody expected him to send a message traditionally reserved for funerals.

Hsu was deeply embarrassed over the mistake and apologized in person the next day to the DPP. He said the flowers were to have gone to the memorial ceremony for the recently-deceased daughter of Presidential Secretary Jiang Yan-shi. Unfortunately, that gathering received the flowers with the card reading "Congratulations!" Hsu's office said the switch was the result of a mistake at the flower shop.

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For Your Information

Taiwan's Number 1 and Number 2 nuclear power plants both consist of two GE boiling water reactors, rated respectively at 640 and 948 MWe net output. Number 1's reactors came on line in 1978 and 1979, and Number 2's came on line in 1981 and 1983.

Number 3 consists of two Westinghouse pressurized water reactors, rated at 890 MWe net output. Number 3's reactors came on line in 1984 and 198[illegible]