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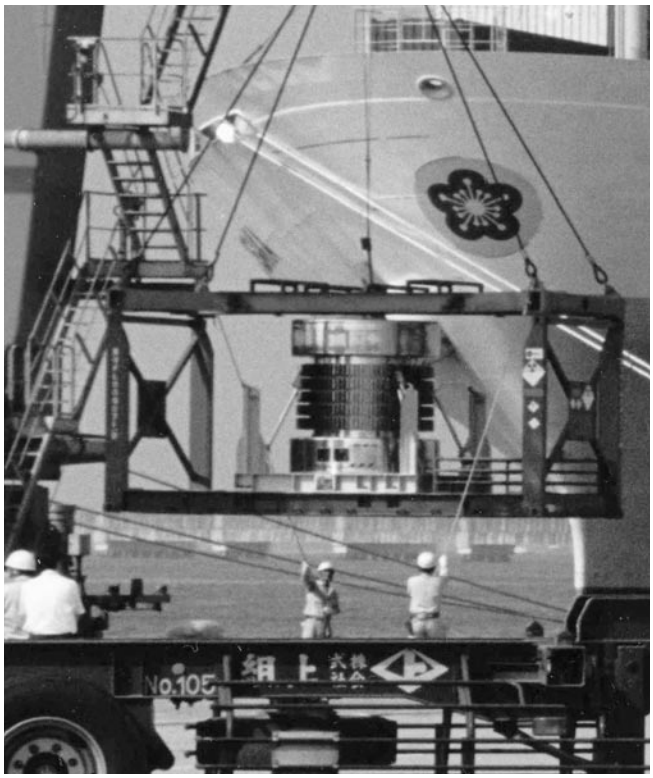
3F Kotobuki Bldg., 1-58-15, Higashi-nakano, Nakano-ku, Tokyo 164-0003, JAPAN
URL: http://cnic.jp/english/ e-mail : cnic@nifty.com



Spent fuel being loaded at Kawasaki Port (photo by Akira Kobayashi)

Irradiated Research Reactor Fuel Shipped to US

On August 4th, two spent fuel assemblies were shipped from Kawasaki to DoE's Idaho National Laboratory (see picture above). The fuel was enriched to 20% and was used in the Research Reactor (100 kWt) at the Atomic Energy Research Laboratory of the Musashi Institute of Technology in Kawasaki City.

First criticality was achieved in 1963, but the reactor was stopped in 1989 due to a coolant leak. Plans to restart the reactor were abandoned, because the US placed a limit of 2009 for receiving spent fuel.

A local woman said, "It is great news that nuclear fuel will be removed from our city, but our joy is muted when we think of the local people living near the spent fuel's destination."

Nuclear Energy Nation Building?

A policy critique

On 31 May 2006 the Ministry of Economy Trade and Industry (METI) released a "New National Energy Strategy". This Strategy contains a new phrase, "Nuclear Energy National Building". This phrase had not appeared before during the deliberations. The Strategy was agreed on by the General Council of the Advisory Committee for Natural Resources and Energy[1] (ACNRE) after just a few hearings. It gives the impression of being an integration of ACNRE's deliberations, but at the time, the nuclear aspects were still being discussed by the Nuclear Energy Subcommittee. The secretariat of this subcommittee submitted a report in the form of a draft outline to the May 30th meeting of ACNRE's General Council. This draft became the basis of the nuclear section of the new Strategy. The grandiose title, "Nuclear Energy National Building", was added by the General Council.

Some members of the Nuclear Energy Subcommittee questioned the inclusion of a phrase which they had not discussed. It seemed that the phrase had disappeared, but it reappeared at the subcommittee's next meeting (June 16th) as a subtitle, and from there the draft was put out for public comment. The Nuclear Energy

Contents

Subcommittee didn't formally agree to the document until August 8th. Thus, the Nuclear Energy Subcommittee didn't call for public comments until after METI had released the Strategy. The order of events was back-to-front. It is a good illustration of how little importance is attached to the views of the general public.

Strategy without a strategy

So what are the contents of this "New National Energy Strategy"? The Strategy identifies the following objectives:

1. Establish a guarantee of safe energy that the public can have confidence in;
2. Establish a clean sustainable base by simultaneously solving both energy and environmental problems;
3. Actively contribute to overcoming the energy problems of Asia and the whole world.

However, the report fails to fundamentally reconsider the developed world's wasteful energy structure. Instead, it rehearses the old theme of "securing" energy. This type of strategy will not succeed in winning public confidence. Also, the report fails to fundamentally reinterpret the concept of growth. Rather, it talks about "sustainable growth", emphasizing continual economic growth.

Fulfillment of these objectives is considered from the following three basic perspectives:

1. Achieve the world's most advanced energy demand and supply structure;
2. Comprehensively strengthen resource diplomacy and energy and environmental cooperation;
3. Perfect the emergency response strategy.

The report takes the view that a comprehensive strategy for securing resources is necessary, because in the near future demand will expand greatly, centered on India and China, and there will probably be a scramble for resources. However, at the same time, in its specifics it sticks firmly to a world order centered on America.

In order to achieve the world's most advanced energy supply structure, it aims to achieve a 30% energy saving by 2030 through the introduction of an energy saving front-runner program. Aiming to achieve a mere one percent energy saving per year is much too conservative. Admittedly, Japan uses energy more efficiently than other countries, but a conservative program such as this indicates that the government is not really serious about saving energy.

The next-generation transportation energy program proposes to reduce dependence on oil to 80%. This is the first time a specific target has been adopted for the transportation sector. However, there is no reconsideration of the city transport system. Rather, the program clouds the issue by only proposing the use of biomass fuel in gasoline cars and the development and popularization of electric and fuel cell cars. No specific target is set for the new energy innovation program. The program doesn't go beyond abstract expressions of encouragement.

Next comes the section on nuclear energy nation building. This is a confirmation of the existing policy[2]. In accordance with the existing policy, it aims to maintain or increase "the current level of nuclear power generation (30 to 40% of the total electricity generation) even after 2030." Also in accordance with existing policy, it aims to "make systematic and comprehensive efforts on such issues as ... the light water reactor nuclear fuel cycle and early commercialization of the fast breeder reactor (FBR), while at the same time promoting research and development into nuclear fusion energy technology."

Generous support for nuclear energy

The Nuclear Energy Subcommittee's report identified five basic policies.

1. Establish a firm national strategy and a policy framework, which do not become "blurred by medium to long-term dramas".
2. Maintain "strategic flexibility" in regard to policies and timing, depending on international circumstances and technological trends.
3. Deepen the constructive cooperative relationships between government, electricity enterprises and makers. To this end, achieve true communication and shared vision between the players. The government will show the broad direction and take the first step.
4. Place importance on "individual regional policies" which are in line with national strategy.
5. Maintain stable policies determined on the basis of "open and fair debate".

It seems that the ten-year period since the introduction of liberalization into the electric power sector was a period when nuclear energy policy was "blurred". It is hard to imagine that nuclear policy will develop as planned. However, the government has adopted a clear position of actively promoting nuclear energy in the context of liberalization of the electric power sector.

It had been predicted that as liberalization progressed nuclear energy would decline. Given the problems involved with finding new sites, it was thought that there would be no choice but to withdraw from nuclear power. This prediction seems to have been premature. Consequently, the role of the movement against nuclear energy has become even more important.

The following specific responses are developed in Section 3, "Current Situation, Issues and Future Responses", of the Nuclear Energy Subcommittee's report:

1. Several measures to maintain or increase the current level of nuclear power generation (30 to 40% of the total electricity generation) even after 2030 (i.e. measures to ensure that plans to build new and replacement reactors are achieved);
2. A rough plan for implementation of the FBR cycle from around 2050, along with a division of roles between the public and private sectors;
3. A plan to foster the development of a labor force to sustain the required technology, including reprocessing technology;
4. Policies to ensure that sites for nuclear facilities can be found;
5. Public relations measures, including education for younger generations.

Considering the number of pages, there are surprisingly few specifics. However, because it is national policy, in the end specific details will be tied up with the funding. For example, it will be necessary to introduce a reserve fund system for interim storage of spent fuel. (If a decision is taken to proceed with a second reprocessing plant, presumably this will be the reprocessing fund.) Since initial investment for nuclear power plants will be very expensive, it will also be necessary to introduce a system of subsidies to ensure that construction of new plants, expanded plants and replacement reactors proceeds smoothly. Subsidies will also be needed for regions where nuclear facilities are sited. In addition, funding will be needed for universities to educate the work force. It is also proposed that consultation and research committees into commercialization of FBR be established. The idea is for public and private sectors to forge ahead united on this.

This is all very bold when the national finances are on the verge of bankruptcy, but how should we interpret it? It is true that the government is stepping forward to offer a helping hand to nuclear energy. With demand for nuclear construction in decline, it seems that the Strategy reflects a view that a certain amount of demand is needed in order to sustain the labor force and the technology of the nuclear plant makers. There is also the issue of the "understanding" of the regions, which became problematic after the Tokyo Electric Power Company scandal.

However, looked at from another angle, if demand for construction doesn't materialize, all these plans are just scraps of paper. If one looks at the long-term plans of the power companies, under the influence of liberalization electricity demand from factories and the like is expected to remain the same or to decline, while demand for lighting and so on from general consumers is expected to increase. In other words, the power companies are depending on increased demand from general consumers. Illustrating the point, the power companies are promoting "all-electric" housing for all they are worth in order to increase demand.

In the end, if ordinary consumers don't help out by consuming more electricity, it won't be possible to build new nuclear reactors. The reactors that are being built now might be completed, but it will be difficult to proceed with those which are still in the planning stage. As long as the national plan has to be implemented by private enterprise, it will not be possible to keep building facilities for which there is no demand.

Hideyuki Ban (CNIC Co-Director)

1. The connections between the agencies and committees associated with METI are extremely difficult to understand. ACNRE is an advisory committee to the Minster for Economy Trade and Industry. The Nuclear Energy Subcommittee is part of ACNRE's Electricity Industry Committee.
2. Framework for Nuclear Energy Policy, Japan Atomic Energy Commission, October 11, 2005

Haiku for the season

Singing cricket
How many nights are you staying
At the bathroom nook?

by Hitoshi Ichinose

Exposure to Radiation During Regular Operations of Rokkasho Reprocessing Plant

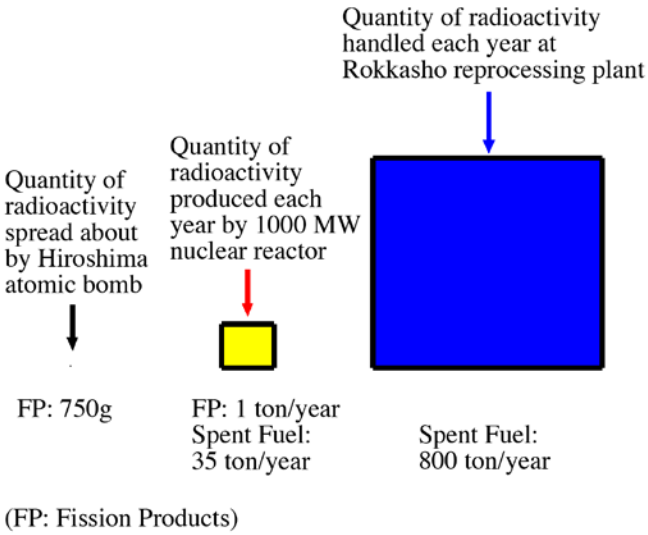
By Hiroaki Koide
(Kyoto University Research Reactor Institute)

Quantity of Radioactivity Handled by Rokkasho Reprocessing Plant

The Rokkasho Reprocessing Plant commenced active tests on 31 March 2006, the last day of the 2005 fiscal year. Japan Nuclear Fuel Ltd (JNFL) wanted to start the tests during the 2005 fiscal year no matter what. As reported in NIT 113, for doing so it received 52.9 billion yen. Of course the fact that it took this step is a problem, given that it has irreversible consequences. Politics and the economy follow the logic of money. But perhaps an even more serious problem is that citizens get caught up in this logic.

The standard nuclear reactors these days are 1000 MW. Each year they burn 1,000 times the quantity of uranium that fissioned in the Hiroshima bomb and they produce a correspondingly larger quantity of fission products. The limit of radiation exposure permitted for members of the general public is set at 1 milli-sievert (mSv) per year[1] (1,000 micro-sieverts (μSv) per year). However, since people are exposed to radiation from many facilities, if an exposure of 1 mSv were allowed from each facility, the level of exposure for each person would exceed the annual limit. Consequently a benchmark of 50 μSv/yr is set for each nuclear power plant[2]. Each year the Rokkasho Reprocessing Plant will handle 800 tons of spent nuclear fuel. This is equivalent to the amount of fuel reloaded each year into 30 reactors (see figure 1). The purpose of reprocessing is to extract the plutonium which has accumulated in the spent fuel. Whereas inside the reactor the plutonium and the fission products somehow or other manage to stay contained within the fuel rods, in the reprocessing plant the plutonium is chemically separated by cutting these fuel rods up into little pieces and dissolving them in nitric acid. Of course, the quantity of radioactivity released into the environment increases by orders of magnitude. It is said that the amount of radioactivity released in one day is equal to the amount released from a nuclear reactor in 1 year.

Figure 1: Huge quantity of radioactive material handled by Rokkasho reprocessing plant



(FP: Fission Products)

There are regulations governing the concentration of radioactivity that can be released from a nuclear power plant in both liquid and gaseous forms. For the reprocessing plant, in regard to gaseous releases, the diluting effect of the atmosphere is taken into account and the radioactivity concentration allowed outside the site boundary is the same as for nuclear power plants. However, if the limit for liquid tritium releases were set at the same level as for nuclear power plants[3], every day the liquid releases would have to be diluted with 1 million tons of water. Consequently the concentration of radioactivity in liquid releases from the reprocessing plant is not regulated. Instead, the radiation dose to the public is calculated and it is considered to be sufficient if the calculated dose is below the regulated level[4]. JNFL and the government say that the calculated radiation dose to members of the public from the regular operation of the Rokkasho reprocessing plant will be just 22 μSv per year[5].

Calculation derived from assumptions on top of more assumptions

As shown in figure 2, the assessment of radiation dose starts from the quantity of

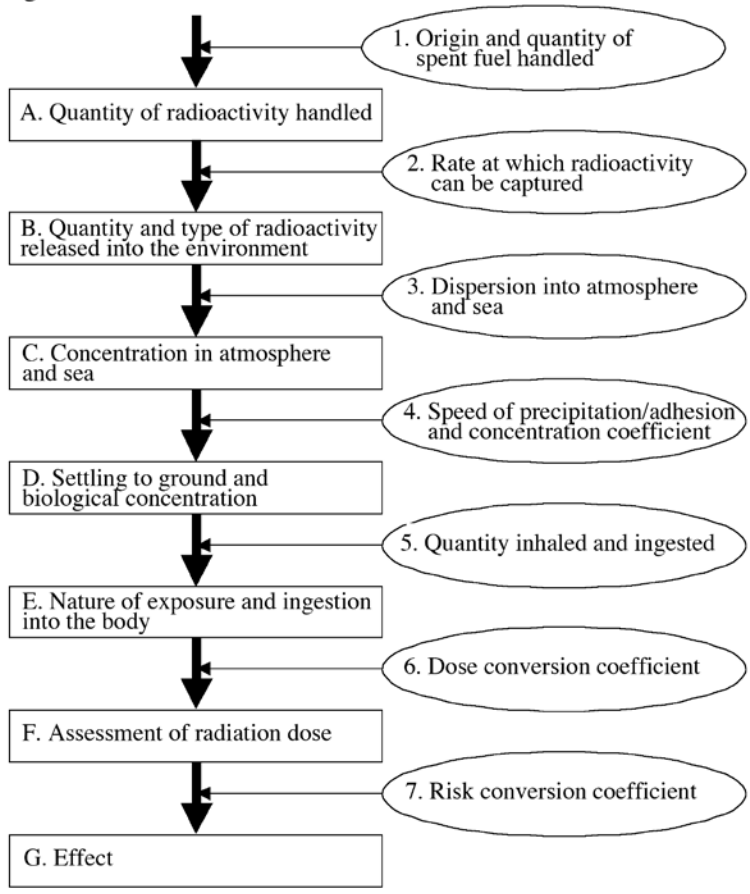
radioactivity handled by the reprocessing plant. There are many intermediate steps in the assessment before a value for radiation dose is finally arrived at. By rights, the radiation effect should then be assessed, but Japan's safety review does not go so far as to assess the radiation effect. Nevertheless, there are still many assumptions made along the way. Depending on the assumptions made, the results could be several times larger or several times smaller. In many cases the results could even vary by orders of magnitude. Naturally there is a big margin for error in the value which is finally derived. In JNFL's submission to the safety review the calculated value is given to two significant figures, as if it had some kind of strict scientific validity. At best it is valid to just one significant figure. Giving it to two significant figures is unscientific in itself. By rights, the margin of error should be shown, with upper and lower limits.

Furthermore, the calculated value is not the maximum dose to members of the public. The assumptions which have been made in deriving this value are shown in the ellipses on the right hand side of figure 2. JNFL has not in all cases adopted the most conservative assumptions and, in some cases, its assumptions are very optimistic. For example, for consumption of seafood the biggest contributor to radiation dose is iodine in seaweed. The concentration coefficient adopted between seawater and seaweed is 2,000. [This means that the concentration of radioactivity in seaweed is taken to be 2,000 times that of the surrounding seawater (ed.).] However, the coefficient used in safety reviews for nuclear power plants is 4,000. So the calculated dose for the reprocessing plant is underestimated by a factor of 2 compared to nuclear power plants (see assumption in ellipse 4).

In regard to the consumption of food, Aomori Prefecture's assessment of the daily consumption of beef is 20 grams, whereas JNFL's assessment is 6 grams (see assumption in ellipse 5). Obviously there are people who eat more beef than this, so on this point also, JNFL's assumption does not represent the maximum value. In regard to the dose conversion coefficient, this has been amended many times over the years, at times by orders of magnitude. In some cases low conversion coefficients have been used in the dose assessment for the Rokkasho reprocessing plant. For example, in the latest regulations the dose conversion coefficient for oral consumption of Iodine-129 is 1.1 x 10^{-4} mSv/Bq, whereas the coefficient used for Rokkasho is 4 x 10^{-5} mSv/Bq. So here too the calculated dose is underestimated by a factor of 3 (see assumption in ellipse 6).

There is also a problem of a different nature. Reprocessing is a core nuclear military technology, which was developed in order to extract plutonium for nuclear weapons. As a loser country in World War 2, Japan was prohibited from nuclear research, so it was way behind European and North American countries in nuclear technology. Consequently, spent fuel from Japan's nuclear reactors was sent to Windscale (also called Sellafield) in the UK and La Hague in France for reprocessing. Also Japan's Tokai reprocessing facility was built by France. One would have expected Japan

Figure 2: Radiation Dose Assessment Flow Chart



to build the Rokkasho reprocessing plant with its own technology by imitating and learning from the Tokai technology. However, in fact, once again Japan asked France to build the plant. One of the radioactive substances released from reprocessing plants is the volatile Ruthenium Oxide (RuO4). France and the UK have had lots of problems containing this substance and there have been many instances of environmental contamination. The quantity of Ru-106 released into the sea each year from France's La Hague reprocessing plant, adjusted to scale based on the quantity of spent fuel reprocessed at Rokkasho, is 1 x 10^{13} Bq. However, the quantity of Ru-106 that will be released into the sea each year from Rokksho, is said to be 2.4 x 10^{10} Bq. So apparently the Rokkasho reprocessing plant, which was built with French technology, will release 400 times less Ru-106 into the sea than the French have managed to achieve (see assumption in ellipse 2). If the quantity of Ru-106 released from Rokkasho turns out to be the same as that released from La Hague, the radiation dose from this substance alone through consumption of seafood works out to be about 13 μSv/yr.

Problems in the exposure scenario itself

In the assessment of radiation exposure from the Rokkasho reprocessing plant, it is assumed that radioactive releases from the exhaust stack will only have a radiological effect as gases and radioactive releases from the liquid release pipe will only have a radiological effect as liquids. However, some of the radioactivity released from the exhaust stack will fall into the sea and contaminate seafood, while some of the radioactivity released to sea will return to land. Radiological effects from the latter have already been observed in the environment around Windscale. Insoluble radioactive substances such as plutonium released as liquids from the liquid release pipe have contaminated the seabed. A portion of this has been blown back to land by the wind and has even been detected in the dust picked up by household vacuum cleaners[6]. When food containing plutonium is eaten, the majority of the plutonium is not absorbed into the body, so it doesn't contribute much to radiation exposure. However, if plutonium is blown on the breeze and is breathed in, it lodges in the lungs and gives a very dangerous uneven exposure. This exposure pathway is not considered in the radiation exposure assessment for the Rokkasho reprocessing plant.

There is also another important problem. In the radiation exposure assessment for the Rokkasho reprocessing plant, it is assumed that the radioactive releases are dispersed evenly in the atmosphere and the sea and that they do not settle or accumulate anywhere. Consequently, it is assumed that the contamination caused by radioactive substances released in any one year does not contribute to radiation exposure beyond that year. However, among the radioactive materials handled at reprocessing plants are many long-lived trans-uranic elements. If these are once released into the environment, the contamination accumulates over a long period of time. Around the Windscale reprocessing plant, the contamination of seafood is not proportional to the radioactivity released in that particular year, but rather to the total radioactive releases until that year[7]. The radiation exposure assessment does not take this long-term accumulation of contamination into account. That fact alone is proof that the assessment is not in accord with reality.

The crime of a society in which everything is decided by economics

Reprocessing was developed under supreme order for military purposes. Operation was permitted no matter how uneconomic the plants were, or how much environmental contamination they caused. Japan's Rokkasho reprocessing plant, which professes to be for peaceful purposes, was designed and will be operated with economics uppermost in mind.

Figure 3 shows the radioactivity that is expected to be released from the Rokkasho reprocessing plant during regular operations and the radiation dose that this will give rise to. The overwhelming majority is from aerial releases, with just 3 isotopes, Krypton-85, Tritium and Carbon-14, making up 70% of the total. JNFL intends to release all of these. It writes, "They cannot be filtered out...They will be released from a 150 meter exhaust stack, with a sufficient dispersion and dilution effect, and from a sea release pipe 3 kilometers out to sea and 44 meters deep."[5]

However, the boiling point of krypton is minus 153ºC. If it is cooled to that level, it can be liquefied and captured. A total of 3.3 x 10^{17}

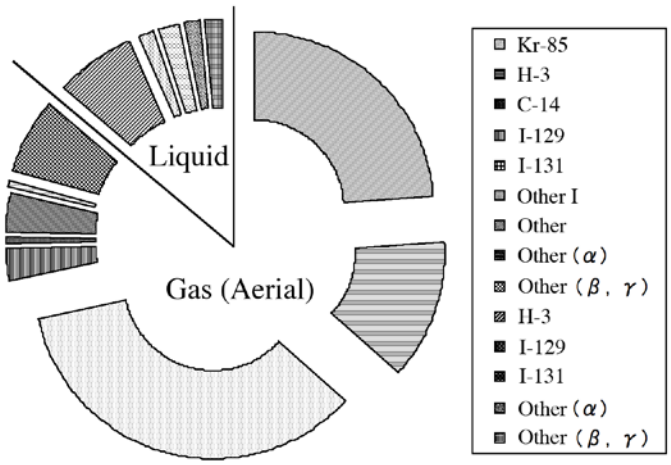


Figure 3: Radioactivity Released and Associated Radiation Doses

Bq of K-85 will be released from the Rokkasho reprocessing plant each year. That converts to a weight of just 23 kg. The government has already spent 16 billion yen on research and development into the capture of krypton, but that will all be money down the drain, because JNFL says it will release all the krypton into the environment. Regarding tritium, a portion of this will be released from the exhaust stack as saturated steam. However, JNFL itself calculates that the radiation dose from tritium released via the exhaust stack is 17 times that of the same quantity of tritium released to sea. It is easy to dehumidify the air released from the stack. Simply by releasing to sea the tritium captured in this way, the radiation dose could be greatly reduced. It would cost money, but technology for concentrating the tritium isotope is already established, so the only reason for not capturing tritium is cost. For C-14 also, the intention is to release the lot. It is possible to capture carbon by chemical processes. For example, it can be turned into a solid by reacting it with sodium hydroxide.

There is no safe level of radioactivity. "Sufficient dispersion and dilution" means spreading contamination over a large area. The K-85 that the Rokkasho reprocessing plant will release each year will contaminate the whole world and will give rise to a global radiation dose of 1,320 person Sieverts[8]. If a cancer death ratio of 1 person per 10 person sieverts is applied, this works out to 130 cancer deaths each year. This represents 5,000 cancer deaths over the 40 years that the plant is expected to operate.

Operation of the Rokkasho reprocessing plant will expose the local people to a level of radiation that is unprecedented in their experience. The standard for "clearance" of radioactive waste is 10 μSv/yr. The 22 μSv/yr radiation dose calculated by the government and JNFL for Rokkasho is already greater than twice this clearance standard. Furthermore, by "dispersing and diluting" without capturing the radioactivity, the government and JNFL are spreading radioactive contamination on a global scale. I believe that by not adopting measures which ought to be adopted, just because they don't want to pay the economic costs involved, they are committing a premeditated crime.

References

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4. Regulations for Spent Fuel Reprocessing Business, Article 16, Clause 7
5. Japan Nuclear Fuel Ltd., Application for Establishment License for Rokkasho Reprocessing Plant
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8. Ian Fairlie, Estimated Radionuclide Releases and Collective Doses from the Rokkasho Reprocessing Facility, Greenpeace Japan, March 2006

Promoting Food Irradiation Without First Verifying its Safety

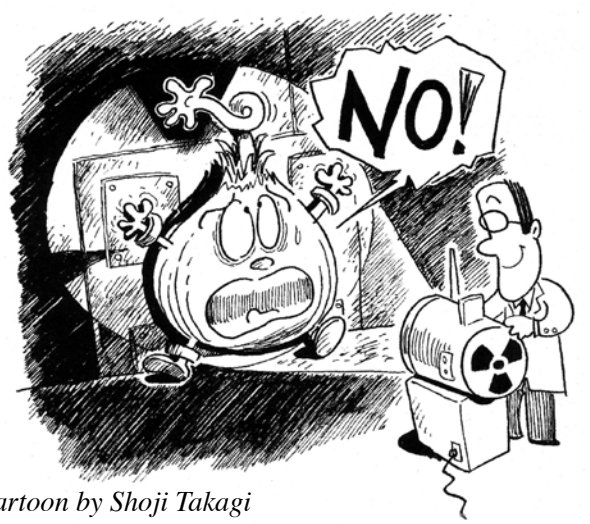
(Summary of article by Dr. Hiroshi Satomi of the Food Irradiation Network)

The Atomic Energy Commission (AEC) decided in 1965 to develop food irradiation as part of a policy of promoting multiple applications of nuclear energy. Specifically, it chose seven products: rice, wheat, potatoes, onions, mandarin oranges, wiener sausages and seafood pastes such as kamaboko. In 1972 the Ministry of Health and Welfare approved the irradiation of potatoes with up to 150 grays (Gy) to prevent sprouting, and in 1974 the agricultural cooperative of Shihoro in Hokkaido began sending irradiated potatoes to market. Consumers were not told that these potatoes were about to appear in the stores until immediately before the event.

The government failed to take into account the fact that new technology such as this could be misused. Mothers were shocked to discover in 1978 that a subcontractor of Wakodo had irradiated ingredients for baby food with up to 30,000 Gy. They were particularly concerned, because research on rats carried out under the nuclear section of the Science and Technology Agency had shown that irradiated food causes deformities, reduced body weight, reduced weight of ovaries and testicles, and an increased fatality rate. A movement against food irradiation arose and many municipalities, including Tokyo, requested Shihoro agricultural cooperative not to ship irradiated food to their markets.

After that, the other six products did not receive approval and it seemed that irradiated food had disappeared. However, in October 2005 AEC adopted a policy of promoting food irradiation in its Framework for Nuclear Energy Policy. It said, "it is important to close the information gap, regarding information of available technologies including their merit and safety, for potential users" (English version, p.36). AEC's Special Committee on Food Irradiation released a draft report on July 13th, in which it concluded that this lack of understanding is the reason why irradiated food has not taken off. It recommended allowing irradiation of the 94 spice and herb products requested by the All Nippon Spice Association, vegetables, and so on. Some of the problems with this report are discussed below.

The report dismissed deformities found in mice which had been fed irradiated onions, implying that these were caused by onion itself rather than by irradiation. However, the study cited in support of this position failed to prove the case. The report also rejected claims that substances (cyclobutanons)



Cartoon by Shoji Takagi

produced in irradiated food as a result of irradiation cause genetic damage, or that they are carcinogenic, despite evidence to the contrary from German research (Federal Research Center for Nutrition Karlsruhe, 1998). The report acknowledged that irradiation sometimes gives rise to odors, which are thought to come chiefly from sulfur-containing amino acids in protein, or from fats. It recognized that this is a problem for marketing, but noted the view that it is not a problem for health. However, the report gave no indication of who said that this is not a problem for health. Unscientific claims like this are littered throughout the report. They bring into question the Special Committee's impartiality, its scientific objectivity and its ability.

In 1980, AEC's Special Committee decided that irradiated food was safe, based on the conclusion of a joint expert committee of FAO, WHO and IAEA. That committee had concluded that food irradiation up to 10,000 Gy did not cause problems. This conclusion took into account Japanese research into the effects of irradiated potatoes on rats. However, it misrepresented the results of that research. In fact, the Japanese research had acknowledged that potatoes irradiated by as little as 300 Gy and 600 Gy affected the body weight and the weight of the ovaries of rats. Far from confirming that irradiated food is safe, it showed that it is dangerous. At the time, no ill effects had been found from irradiating potatoes with 150 Gy, so this was set as the limit for irradiated potatoes. Deformities were found in second-generation rats from onions irradiated with 150 Gy, but since no application for approval was submitted for irradiated onions, they were not assessed.

The Japanese research into potatoes was a big

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Workers' Radiation Exposure at Japan's Nuclear Facilities

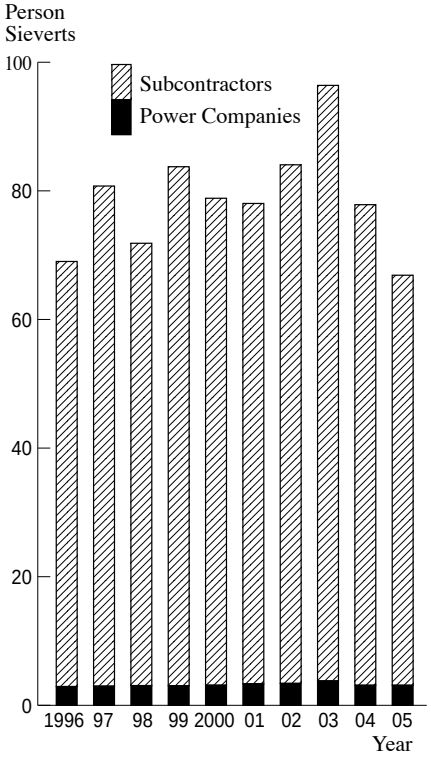
(April 2005 - March 2006)

In July, the Nuclear and Industrial Safety Agency (NISA) released data relating to worker radiation exposure and the management of radioactive waste at nuclear facilities for the 2005 fiscal year (ending 31 March 2006). The data covers nuclear power reactors, nuclear fuel related facilities and radioactive waste facilities.

With the start-up of the Shika-3 reactor, the number of nuclear power reactors increased to 55. Total collective dose at nuclear power plants in FY 2005 was 67.07 person-sieverts compared to 78.23 person-sieverts in FY 2004.

All 216 people who received doses in the 15-20 milli-sievert (mSv) range were sub-contractor workers. The highest dose was 19.4 mSv at Kashiwazaki-Kariwa. By contrast, figures published by the Radiation Dose Registration Center (part of the Radiation Effects Association) were much higher. This is because these figures take into account the fact that some people worked at more than one nuclear power plant. According to these figures, 409 people received doses in the 15-20 mSv range and one person (working at two plants) received a dose in the 20-25 mSv range. The average exposure of people working at a single plant was 0.6 mSv. The average increases to 2.1 mSv for people working at two plants, 2.9 mSv at three plants, 3.6 mSv at four plants, and 4.1 mSv for people working at five or more plants. Subcontractor workers received 95% of the total collective dose was. The highest dose for an employee of a nuclear power company was 11.8 mSv at Ohi.

Worker Exposure at Japanese Nuclear Power Plants (1996-2005)



Epidemiological studies on workers at Japan's nuclear power plants are based on records kept by the Radiation Dose Registration Center. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) published a study in February (report for the third period: 2000-04) which acknowledged a direct correlation between dose and incidence of cancer of the esophagus, lung cancer, multiple myeloma, etc.. Nevertheless, the report concludes, "No clear evidence that low doses of radiation have an effect on the rate of cancer deaths was found." The Radiation Effects Association has conducted this epidemiological study on behalf of MEXT since 1990 through funding under the Special Budget Law for the Development of Electric Power.

Mikiko Watanabe (CNIC)

Continued from page 8 obstacle for the international promoters of irradiated food, who wanted to show that irradiation was safe up to 10,000 Gy. The FAO/WHO/IAEA expert committee attempted to negate the Japanese research in WHO Technical Report No. 604, published in 1977. It acknowledged that a statistically significant change in the size of ovaries had been observed in rats, but implied that irradiation was safe because problems had not been observed from the perspective of tissue pathology. However, given that the weight of the ovaries was reduced by as much as one-third in the Japanese experiments, if the cells themselves were normal, one must conclude that the number of cells was reduced.

AEC's Special Committee's 1980 conclusion that food irradiation up to 10,000 Gy is safe was based on the 1977 FAO/WHO/IAEA report's willful misinterpretation of the Japanese data. It is a great mistake that the Special Committee is now proposing that food irradiation be permitted, without first revisiting the dubious basis of its claim that food irradiation is safe. At least the FAO/WHO/IAEA report acknowledged the need for more experiments into changes induced by irradiated food in the ovaries and testicles of rats. However, AEC is ignoring this caution. It has a responsibility to the public to provide scientific answers to this and other outstanding questions. The draft report fails to do this, so it will not generate public confidence in irradiated food.

Group Introduction:

Phase-Out Nuclear Energy Downtown Network: a grassroots gathering place

by Shun'ichi Uchiyama*

Chernobyl was a terrible accident. Despite what the government and the power companies say, in a small country like Japan, there is no safe place left. With this in mind, in 1989 a national citizens' movement, led by Jinzaburo Takagi, launched a petition for the enactment of a nuclear phase-out law. In East Tokyo the Phase-Out Nuclear Energy Downtown Network joined this movement, demanding that the right to choose a safe environment be returned to the citizens.

But no matter how fervent the plea, for it to become a reality certain practical conditions must be met. In this, the role of the Downtown Anti-War Movement was indispensable. At the time of the nuclear phase-out law petition, this movement had sections in all the administrative districts in East Tokyo. Since its founding in 1982 it had been holding "Downtown Anti-War Gatherings". The focus of these gatherings was "No more Tokyo firebombings!" Coops, unions and citizens' groups were the prime-movers in the movement and they got together to form the Phase-Out Nuclear Energy Downtown Network. The network was initiated by six people, including representatives from these groups and a lawyer. It started up with 120 group and individual members.

The original name of the network was Phase-Out Nuclear Energy Law Downtown Network. We demanded a reversal of Japan's nuclear-based energy policy and collected signatures for the nuclear phase-out law petition. Then in the autumn of 1990, we were contacted by mothers of Chernobyl victims in Kiev. They asked if we would invite them for a brief visit to Japan. Downtown Tokyo is a place with a strong sense of duty and humanity. But besides that, this request from Kiev provided us with an opportunity to broaden the age range of people involved in our work and to engage in cultural exchange, so we decided to add a new dimension to our movement.

Their visit provided an opportunity to spread the message about the danger of exposure to radiation from nuclear power plants and to become involved in relief and exchange activities for victims.

Downtown Tokyo high school students Mayuko Suzuki (L) and Mina Hosoi with children in a children's hospital in Kiev

Focusing on Kiev, to date we have sent thirteen shipments of medicine, invited children to visit on two occasions and sent four delegations from Tokyo. Each time we made do with donations to cover costs and the labor was left in the hands of whoever was available. Our wish is that through our activities we might make some small contribution to the cause. Our style of operating is reflected in our motto: "Stick with it, use what is available, and take responsibility for your own ideas".

In June this year we invited Natalia Baranovska, a researcher at the Chernobyl Museum, to Tokyo. This was part of our ongoing exchange program. The idea came when a group of downtown high school and university students visited the Chernobyl Museum in 2004. They mentioned the Hiroshima Peace Memorial Museum and asked Natalia to come to downtown Tokyo and visit a high school here. We wanted to show her how we live. The program included visits to a high school class, to the work places of network members, to a government office, to nuclear-related places, and to various cultural sites, including the famous Asakusa Shrine in downtown Tokyo.

While Natalia was in Tokyo, she paid a visit to an evening class at the Arakawa Commercial High School. The students had all come straight from their daytime jobs. After the lesson one of the students said, "Natalia's talk was about a time when we were just born." It was a poignant reminder to us that if we had managed to prevent the accident, the evening's talk wouldn't have been necessary.

** This is an abbreviated version of an article by Shun'ichi Uchiyama, who works in the group's office.*

NEWS WATCH

FBR R&D funding

The Japan Atomic Energy Agency has published an estimate of research and development funding needs for the fast breeder reactor (FBR) cycle up to the end of the 2010 fiscal year (FY). The figure includes 37 billion yen for FY 2006 and approximately 50 billion yen per year thereafter for a total over 5 years of 248 billion yen. Operations and maintenance costs for Monju (280 MW prototype FBR, currently undergoing modifications) come to around 20 billion per year. In addition to Monju, the calculation takes into account design research for the early construction of a demonstration reactor and fuel cycle-related equipment, as well as R&D into "revolutionary technology" in preparation for commercialization.

One billion yen for HLW dump candidates

Applications for a high-level radioactive waste (HLW) dump site opened in late 2002. Since then no candidates have emerged, so the Agency for Natural Resources and Energy (ANRE) now plans to greatly increase the subsidies available to municipalities which agree to carry out a "document study". ANRE has included this in its 2007 budget request.

The document study is the first stage in the selection process. If the document study finds no evidence that a candidate municipality is unsuitable to become a HLW dump site, the selection process proceeds to a rough outline study, then to a detailed study. Just for agreeing to undertake a document study, municipalities receive 210 million yen per year. The subsidy for the rough outline study is 2 billion yen per year. (The subsidy for the detailed study has not been determined.) The maximum total payment is 7 billion yen, because upper limits are placed on the subsidies. ANRE now plans to increase the subsidy for the document study to 1 billion yen per year.

Several local governments showed some interest, but each time plans were abandoned as a result of strong local opposition. However, since plans to increase the subsidy were reported, one municipality has renewed its interest and a few others have expressed interest for the first time.

Earthquake Guidelines revised

Since July 2001 the Subcommittee on Earthquake Resisting Design (under the Special Committee on Nuclear Safety Standards and Guides at the Nuclear Safety Commission (NSC)) has been re-assessing the earthquake design safety guidelines for nuclear power plants (see NIT 112, top article and News Watch). On August 28th this Subcommittee accepted the draft revision to the guidelines with almost no changes to the version released in April and on September 19th NSC formally approved the new guidelines.

Public comments were sought on the April draft, then on June 11th a previously unknown active fault was found near Chugoku Electric's Shimane nuclear power plant. One of the Subcommittee's members, Professor Katsuhiko Ishibashi of Kobe University, proposed that the active fault survey standards be carefully considered before approving the new guidelines. His proposal was not accepted, so he tendered his resignation from the Subcommittee at the August 28th meeting.

Second Japan-US GNEP meeting

The second round of discussions between Japan and the US about the US's Global Nuclear Energy Partnership proposal (see NIT 113) took place in Tokyo on August 21st. Details of the discussions have not been released, but according to the August 22nd edition of the Denki Shimbun newspaper, the following issues were discussed. "The Japanese government made proposals in regard to Japan's role under each heading, taking into account discussions which have already taken placed between Japanese and US experts. At the same time, it explained its position regarding the legal framework for progressing future cooperation

between Japan and the US. For its part, the US indicated that it intended to make significant changes to the structure of the original GNEP plan. The Japanese government inquired into US intentions concerning these changes."

Japanese industry responds to GNEP request for Expressions of Interest

On September 8th, eleven Japanese nuclear industry players submitted a joint response to the US Department of Energy's (DOE) request for expressions of interest (EOI) in its Global Nuclear Energy Partnership (GNEP). The EOI relates to two GNEP programs, the "Consolidated Fuel Treatment Center" (CFTC) and the Advanced Burner Reactor (ABR). Joint bidders include Japan's leading nuclear research agency, Japan Atomic Energy Agency (JAEA), uranium enrichment and spent fuel reprocessing facility owner, Japan Nuclear Fuel Ltd (JNFL), and Japanese nuclear plant makers Mitsubishi Heavy Industries, Toshiba and Hitachi. (See press release on CNIC's web site.)

Japan - Kazakhstan nuclear cooperation memorandum

During the first visit to Central Asia by a Japanese Prime Minister, on August 28th Prime Minister Koizumi met with Kazakh President Nazabayev. They signed a bilateral memorandum on the promotion of cooperation in the field of "peaceful use" of nuclear energy. It is said that as soon as conditions have been worked out they will move toward signing a nuclear cooperation agreement.

Areas of proposed cooperation include assistance for the introduction of nuclear power into Kazakhstan, development and import of Kazakhstan's uranium (Kazakhstan boasts the second largest uranium deposits in the world), reconversion of uranium recovered from reprocessed spent fuel (enrichment would be carried out in Russia), and so on.

Plutonium data for 2005

Plutonium data for the year ending 31 December 2005 was released on September 5th. As a result of requests from CNIC, the data is more detailed than in previous years, including details about material unaccounted for (MUF). Japan's plutonium holdings increased slightly from the previous year to 43.8 tons, 37.9 tons of which is held overseas and 5.9 tons of which is held in Japan.

Detailed tables will be included in the next issue of NIT. They will be uploaded onto CNIC's web site as soon as possible.

Map of places mentioned in NIT 114

Nuke Info Tokyo is a bi-monthly newsletter that aims to provide foreign friends with up-to-date information on the Japanese nuclear industry as well as on the movements against it. Please write to us for a subscription (Regular subscriber - $30 or ¥3,000/year; supporting subscriber $50 or ¥5,000/year). When paying in Japan, the subscription fee should be remitted from a post office to our post office account No. 00140-3-63145, Genshiryoku Shiryou Jouhoushitsu. Due to costly processing fees on personal checks, when sending the subscription fee from overseas, please send it by international postal money order. Alternatively, you can ask us to send you details regarding bank transfers. We would also appreciate receiving information and newsletters from groups abroad in exchange for this newsletter.

Translator: Philip White

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