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# The Waste Bin: Nuclear Waste Dumping and Storage in the Pacific

BY JAMES B BRANCH

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*The South Pacific Region, because of its vastness, is an attractive dumping ground for nuclear wastes. Indeed, the area is already being used for this purpose. For example, from 1946–1970 the US dumped 100 000 curies of low-level nuclear waste in Pacific Ocean sites and the US Navy has plans to sink at least 100 obsolete nuclear submarines in the Pacific over the next three decades. Controversy now rages around a Japanese proposal to dump radioactive wastes from the country's 25 nuclear reactors into the Pacific. Pacific islanders have formed citizen action groups to fight the plan and no resolution is in sight.*

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The Pacific islands' experience with the nuclear age began in 1945 when the B-29 Enola Gay took off from Tinian in the Northern Mariana Islands to drop an atomic bomb on Hiroshima. Over the years, the Western nuclear powers have left a trail of radioactive debris in the wake of their nuclear testing programs. The experience for the Pacific islanders has been traumatic. The United States conducted nuclear weapons testing at the Marshall atolls of Bikini and Eniwetok in the 1950s, contaminating once-populated islands. Within four months of the testing, ocean currents transported the contamination 1200 miles west to Guam where radioactivity (gross beta) in the marine food chain increased to 100 times that of ambient levels (1). Bikini was eventually declared safe for habitation and the people returned to their native island only to be evacuated a second time when high radionuclide counts were found in their bodies. More examples:

- In 1981, nuclear waste from the French weapons testing program washed on to reefs near the island of Moruroa as a result of heavy winds and seas. According to Admiral Jacques Choupin, Head of the French Nuclear Experimental Center, the wastes came from tests held before 1975 (2).

- Relatively small amounts of nuclear waste, involving 31 containers, were dumped by the University of Hawaii 30 miles east of Honolulu on 21 occasions during a period of 16 years ending in 1970 (3).

- During the period of 1946–1970, the US dumped 100 000 curies of low-level nuclear waste in ocean sites, including along the coast of California. US Environmental Protection Agency (EPA) studies of these sites found ruptured waste containers and radionuclide concentrations in the surrounding sediments and water above expected ambient levels (4).

However, the greatest amount of radioactive material introduced into the Pacific and other world oceans has come through the atmosphere due to nuclear tests conducted in the Northern Hemisphere.

## NUCLEAR WASTE STORAGE AND DUMPING SCHEMES

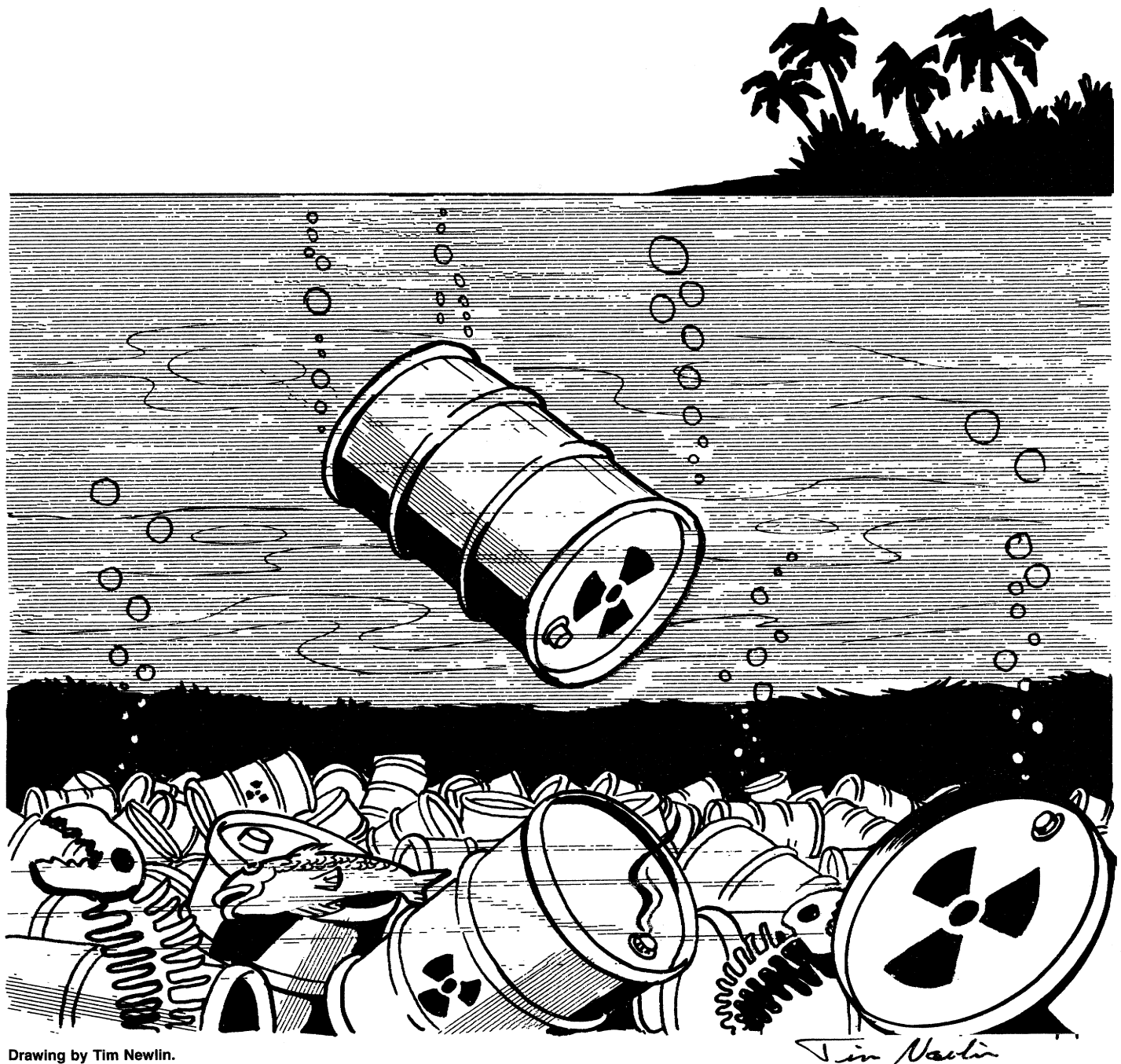
### Origin of Wastes

Japan, with 25 reactors, has the second largest commercial nuclear program in the world; the US, with over 70 plants, is in first place (5). But, the Japanese government is projecting 58 plants by the year 1990. Other Pacific countries possessing nuclear power include South Korea, Taiwan and the Philippines. In the case of Japan, much of the spent nuclear fuel is currently being shipped to France for reprocessing. Most high-level waste is being stored at special sites adjacent to the plants while the governments involved seek permanent storage and disposal solutions. In addition, all of these plants generate low-level wastes which are generally stored in metal containers filled with con-

crete. Japan has 460 000 such containers and the number is increasing by 60 000–70 000 annually (6). Nuclear wastes are also produced by defense activities. Waste produced by the French nuclear weapons testing program was apparently buried on an undisclosed island in Polynesia prior to 1975. What is happening to it now has not been publicized. The US Department of Navy has plans to sink at least 100 obsolete nuclear submarines in the Pacific over the next three decades (7). Each vessel reactor contains 62 000 curies of residual radioactivity. The disposal of one such nuclear submarine would nearly equal the entire amount of radioactive material already dumped into the ocean by the US. The Navy, in its environmental impact statement, claims that no measurable amount of radioactivity would be released into the environment. Recently, the Navy announced that it will study land-disposal options for the submarine reactors. The National Advisory Committee on Oceans and the Atmosphere is preparing a report to the US Congress recommending that the US end its 14-year moratorium on ocean dumping, and consider resuming radioactive waste dumping in the oceans.

### The Japanese Plan

In 1979, citing the London Dumping Convention (LDC) as its legal authority, the Japanese government announced its intent to experimentally dump 10 000 drums (500 curies) of low-level nuclear waste at 30°N 147°E, a site north of the Mariana Islands.



Drawing by Tim Newlin.

The dumping was scheduled to occur in the autumn of 1981 after Japan ratified the LDC treaty (8). Full-scale dumping of up to 100 000 curies a year was to commence in the same location after the Japanese government verified the safety of its experimental program. The dumping has been postponed while Japan seeks the understanding and consent of the Pacific islanders. Research is presently being conducted on possible sites and technologies for land storage and disposal within Japan.

#### US-Japan Studies

In 1980, a bilateral agreement between the US and Japan launched a feasibility study of Pacific island sites for the storage of 10 000 tons of high-level spent nuclear fuel

from reactors in Japan, Taiwan and South Korea (9). The islands of Palmyra, Wake and Midway were under active consideration as potential sites (10). The study was to end in 1983, but so far no information has been released by either government. However, the US recently announced at the United Nations that there are no plans at present to build a nuclear fuel storage facility in the US Trust Territory Pacific Islands. The environmental impact studies for Pacific island storage are continuing at this time. In July 1983, Marshall Islands President Amata Kabua, without the knowledge or consent of the residents of Bikini, offered the Japanese government the unpopulated and heavily contaminated islands of Bikini atoll for the storage of high-level nuclear waste. Japan declined

the offer on technical grounds. It was reported that the Japanese government didn't want Pacific islanders to assume plans for ocean dumping were being abandoned in favor of land storage (11).

#### Subseabed Disposal

Both the LDC and US law currently prohibit the ocean dumping of high-level nuclear waste. Even so, the US has spent in excess of \$30 million researching the disposal of spent nuclear fuel on the ocean bottom. One site under study for sub-seabed disposal is in the same Pacific location as the proposed Japanese dump site. Ocean dumping is somewhat primitive and consists mainly of placing canisters filled with waste on the ocean floor. A more

sophisticated (and much more expensive) technique involves sinking waste-loaded projectiles 30–100 meters into ocean bottom sediments. There is currently a debate within the LDC as to whether sub-seabed emplacement constitutes “ocean dumping.” The US National Oceanic and Atmospheric Administration is of the opinion that it does not (12). If this view prevails, sub-seabed disposal would not be regulated by the international community. At the eighth meeting of the LDC, which was conducted in February 1984, a majority of the nations attending endorsed a resolution that sub-seabed disposal is indeed dumping and therefore prohibited. The snag here is that LDC resolutions are non-binding upon member countries.

## THE PACIFIC RESPONSE

Announcement of Japan's intent to dump nuclear wastes in the Pacific aroused the concern of Pacific islanders and their governments.

### Confrontation With Japanese Scientists

Elected leaders from Guam, Saipan, Samoa, Nauru, and the US Trust Territory Islands formed an association and met on Guam in 1980 to consider Japan's plan to dump low-level nuclear wastes near Maug in the Northern Marianas. Representatives from Japan's Science and Technology Agency (STA) were invited to discuss the dumping plans and safety assessment with these Pacific leaders. The arguments against the dumping were emotional and initially unsupported by scientific evidence. Nevertheless, the meeting had a dramatic effect on STA officials who stated publicly that Japan would not dump until the understanding of the Pacific people was obtained. The STA officials promised to travel throughout the Pacific islands and explain the plan as many times as necessary to gain the approval of the people. These presentations began three months later with a visit to Guam and Saipan by a team of Japanese nuclear scientists and top STA officials. They brought with them the details and data to support their draft safety assessment (13). The Northern Marianas government obtained the services of Dr W Jackson Davis from the University of California, to review the Japanese data. Dr Davis had analyzed the environmental consequences of the dumping which occurred off the California coast, and became an outspoken critic of ocean dumping. In May 1981, the Northern Marianas released Davis' findings, which documented serious weaknesses in the Japanese safety assessment (14). Davis found that the hypothetical models used by STA assumed that the released wastes would diffuse evenly throughout the ocean. Surveys of the US dumpsites demonstrate that the wastes in fact remain concentrated in the dumping area where they can contaminate fish. Altogether, Davis found what he believed to be seven major errors in the Japanese safety assessment and he concluded that the proposed dumping could endanger the health of both Japanese and Pacific islanders.

In September 1981, Dr Davis met with STA officials on Guam at the third annual meeting of the Pacific Chief Executives Association. By that time, it was clear the Japanese were up against a formidable anti-dumping movement backed by scientific evidence and that the STA might have underestimated the dangers of dumping. As a result, Japan announced a further delay in the dumping project. As of October 1984, the final safety assessment of the Japanese proposal has not yet been released.

### Petitions

In response to Japan's nuclear waste dumping announcement, many citizen groups were formed throughout the Pacific Region which petitioned against the plan. In addition, resolutions of opposition were passed by island legislatures and coalitions of island governments including the Asian Pacific Parliamentarian Union, South Pacific Forum and the South Pacific Conference. The Lt Governor of Guam and the Governor of the Northern Marianas traveled to Tokyo to present the Japanese Diet with a formal anti-dumping petition representing seventy groups throughout the Pacific Basin with memberships of several million people. The petition requested a more thorough safety assessment of Japan's dumping plan, and provided data from Dr Davis' investigations as evidence to support the request. The Governors also met with Ichiro Nakagawa, Japan's STA Director. It was at this meeting that Nakagawa made the now famous statement that one could “embrace and sleep in the same bed” with Japan's drums of nuclear waste without danger.

A world-wide petition campaign against French nuclear testing and Japan's nuclear waste dumping plan was initiated by an anti-nuclear group in Japan as a result of an appeal made by J Roman Bedor, a citizen of the Republic of Belau. To date, individuals from 76 countries have signed including representatives of 18 Pacific island countries. The petitions were presented to STA on March 1, 1983. Mr Okazaki Toshiro, an STA representative, told the delegates presenting the petitions that “we would like to proceed with nuclear waste dumping as soon as possible, since the safety assessment has already been completed as far as Japan is concerned” (15). During meetings between Australian Prime Minister Bob Hawke and Japanese Prime Minister Yasuhiro Nakasone, held in January 1984, Japan announced a further postponement of the dumping until 1985, while it pursues the possibility of storing its low-level nuclear waste on land. It was made clear that Japan still refuses to give up the dumping plan completely, agreeing only to continue discussing the plan with Pacific island leaders. In August 1984, the Japanese Science and Technology Agency declared that it had resumed its plan to dump in 1985.

### The Rarotonga Conference

The South Pacific Forum and the South Pacific Conference both agreed in 1977

that a comprehensive environmental program was desirable for the Pacific Region. On March 8–11, 1982, the Conference on the Human Environment in the South Pacific was held in Rarotonga to consider regional environmental policies. Widespread concern was expressed at this meeting regarding nuclear testing and radioactive waste disposal. These concerns were translated into policy statements known as the “Rarotonga Declaration,” wherein the Conference declared that “the storage and release of nuclear waste in the Pacific regional environment shall be prevented,” and “testing of nuclear devices against the wishes of the majority of the people in the Region will not be permitted” (16). The Conference further resolved that “Japan, US and other governments should be requested to abandon their studies of specific proposals to store or dispose of nuclear waste in the Pacific regional environment . . . They should be strongly urged to research alternative methods of disposal outside the region.” Finally, the Conference requested all eligible Pacific island countries and territories to accede to the London Dumping Convention.

The Conference adopted two primary strategies to block nuclear dumping in the Pacific Region: 1) The modification of the LDC through resolution or amendment of bylaws initiated by the Pacific island members and other sympathetic countries, and 2) the establishment of a Pacific Regional Dumping Convention that would prohibit dumping in the Pacific and take precedence over the LDC. Article 8 of the LDC provides that contracting parties of the treaty with a common interest in protecting the marine environment in a given geographical area may enter into regional agreements. There are already several precedents for such regional conventions, including the Oslo Convention and the Barcelona Convention, which explicitly prohibit dumping of radioactive waste into the North and Mediterranean Seas, respectively. The proposed regional Dumping Convention ultimately became known as the “Convention for the Protection and Development of the Natural Resources and Environment of the South Pacific.”

### London Dumping Convention

By the 1983 LDC meeting, the two Pacific island governments of Nauru and Kiribati acceded to the LDC. Papua New Guinea were already an LDC member country, as were New Zealand and the Philippines. In the 1983 LDC meeting, Nauru and Kiribati, supported by a scientific document prepared by Dr Davis (17), proposed an amendment to ban all radioactive dumping at sea. The amendment was tabled until 1985 to allow for further scientific study on the environmental effects of dumping. However, the amendment had considerable support as the LDC members were about equally divided on the issue of a total ban (18). The Pacific proposal did lead to the approval, by a 75 percent margin, of a non-binding resolution introduced by Spain calling for an immediate two-year moratorium on all nuclear waste dumping. The US voted against the resolution despite the fact that the US Congress

had just passed legislation establishing a similar domestic moratorium. Japan also voted against it, along with four other countries. The British government, which still had an active nuclear sea-dumping program in the Atlantic, announced it would ignore the moratorium (19). At the same meeting, contracting parties to the LDC agreed to decide in 1984 whether subseabed emplacement of high-level nuclear waste is defined as dumping and prohibited under the existing convention. Even though the moratorium was legally non-binding, trade unions in Britain and throughout the world heeded the message of international opinion. As a result, 1983 marked the first year since 1946 in which no nuclear wastes were dumped at sea. To date, Fiji and the Solomon Islands have also joined the LDC. The ninth LDC meeting will be held in September 1985. This will be a critical session in that the Nauru/Kiribati amendment will be voted upon. The vote will be close as it must pass by a two-thirds majority. Unlike a resolution, an amendment to the LDC is binding upon all member nations.

#### Convention for the Protection and Development of the Natural Resources and Environment of the South Pacific

Three meetings of Pacific island experts have been conducted in the South Pacific Commission (SPC) headquarters at Noumea for the purpose of drafting the Convention treaty documents and protocols. The mandate of the experts was made very clear by the Rarotonga Declaration in its statements of policy which *prohibits* nuclear waste disposal. As a result of proposals introduced by the nuclear countries represented, the proposed language of the draft convention was twisted to read that "contracting parties shall take all appropriate measures to prevent, reduce and control *pollution* in the Pacific resulting from the storage and disposal of nuclear waste and the testing of nuclear devices" (20). In addition, the Convention area has not been decided upon. The majority of the island governments want a much larger area designated than the proposed 200 nautical mile area around each island, which would not include the proposed Japanese dumpsite. So far the expert meetings have failed to produce a consensus. A fourth expert meeting will be held in 1985, and the plenipotentiary Convention has not yet been scheduled.

The US territorial government of Guam has been a primary advocate of the Convention. When the Convention treaty is ready for ratification, the US territorial island governments including Guam will be unable to sign. The irony of this situation is not lost upon the Guamanians.

#### Report on Radioactivity in the South Pacific

In order to assist in the preparation of the Regional Convention treaty and its various protocols, the South Pacific Commission brought together a technical group of scientists to review and document the problems of radioactivity in the South Pacific

Region. Their extensive and impressive report (21) considered all possible sources of ionizing radiation and radioactivity including natural, medical, and industrial radiation, and that from nuclear explosions. An entire section of the report is devoted to radioactive waste storage and disposal. Among its many conclusions, the Technical Group found that exposure to artificial sources of radiation (primarily from atmospheric nuclear tests), is considerably *lower* in the South Pacific Region than it is for those living in the Northern Hemisphere. Concerning the risks involved with low-level nuclear waste dumping, the Technical Group concluded that current international standards are restrictive enough to pose little risk to human health or environmental safety. The Japanese dumping rates are well within these limits, and the Technical Group felt that the proposed Japanese dumping operation is not a significant environmental safety concern. However, the Group did emphasize that scientific understanding of oceanic processes and transfer pathways is insufficient for exact predictions to be made. With respect to the subseabed disposal of high-level nuclear waste, the Technical Group felt that research should continue as it is too soon to assess its safety or practicality. The Technical Group was not able to examine any documents pertaining to the proposed storage of high-level nuclear waste within the South Pacific Region, but expressed concern with the possibility of accidental releases of radionuclides.

#### CONCLUSION

It appears that Japan intends to dump unless prevented to do so by international law. The US, in voting against the LDC moratorium on dumping, and in its continuing research of subseabed disposal techniques, is apparently attempting to keep open the option of ocean dumping. However, the attitudes of many nuclear nations are changing toward finding permanent land disposal techniques, as witnessed by the 1983 and 1984 LDC voting.

The scientific community wants a decision based upon evidence rather than emotion. The Technical Group on Radioactivity in the South Pacific Region has pointed out that there is little scientific basis for a prohibition against dumping, but the Group concedes that legal, political and moral principles may dominate the evaluation of nuclear ocean dumping plans. The general feeling among islanders is that they need no further scientific evidence to take actions designed to protect their ocean environment and their health. The people of the Pacific islands have not received any benefits from the nuclear power industry, yet they are being asked to accept the radioactive garbage of this industry. Palau Legislative Speaker Tasiwo Nakamura said it best when he appeared before the Japanese scientists on Guam . . . "you don't throw the seeds of a poisonous fruit in the yard of your neighbor."

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