

## Mercury pollution

# Dry battery alarm in Japan

Tokyo

A PAIR of headphones and a portable cassette player have become pretty much standard street wear for young Tokyoites, but they are creating a new problem for the Japanese Government — how to dispose safely of the batteries that power them. Alkaline-manganese batteries have been favoured because they provide a stable voltage and last a long time: the trouble is that they contain a lot of mercury which, it is feared, is finding its way into the environment from municipal rubbish tips.

The risk of mercury poisoning raises strong emotions in Japan. In 1956 and 1964, major outbreaks of Minamata disease, caused by eating shellfish contaminated by methyl mercury in factory effluent, left thousands of victims, some paralysed from birth.

Public protest over risks from batteries led this week to an announcement of subsidies and tax incentives for industry to set up a special non-profit research and development association to find ways to make mercury-free batteries. This move has, however, neither been welcomed by industry nor been seen as much more than a sop to public opinion by consumer groups. Industrial companies have been trying for years to take the mercury out of batteries — simply because it is so expensive — but without finding a suitable alternative.

Japan is now manufacturing a staggering 2,850 million dry batteries each year. About two thirds of these are for domestic use and the 70 tons of mercury they contain — mainly in the alkaline-manganese batteries and "button" type mercury batteries used in cameras — end up in domestic rubbish, most of which is used in landfill in 2,500 municipally owned sites. According to calculations at the National Institute of Environmental Science, the research arm of the environment agency, these sites will have an average battery-derived mercury content of about three parts per million — a thousand times higher than the maximum mercury content permitted in water supplies — on top of a small amount of mercury from discarded fluorescent lighting tubes and other sources. As the batteries corrode, the mercury will enter the environment and an unknown fraction of it will be converted into organic mercury by bacteria and leached away. Most sites are small and are converted to other uses within five years; being municipally owned, they are often converted to public use, including the building of schools and playgrounds. The risks are much less from the small fraction of rubbish that goes to incinerators rather than to landfill. Incinerator temperatures are far above the boiling point of mercury and the concentration of vapour reduced into the air is low — much lower than the World Health Organization guideline levels although still

thousands of times greater than natural background levels.

Consumer groups are now demanding that batteries be collected and disposed of separately from other rubbish. Already about 400 of the nation's 3,300 municipalities have passed local regulations requiring citizens to deposit their used batteries at special disposal centres rather than in household rubbish, and that number is expected to grow to 800 by the end of the year. All the local authorities can do with the batteries at the moment, however, is to store them until some safe disposal method has been found.

Dr Tsukehiro Gotoo, chief researcher at the National Institute of Environmental Science, hopes to see the construction of five battery reprocessing plants across the country together with the enforcement of a refundable deposit system to encourage the return of used batteries. A private battery reprocessing plant is already in operation at Hokkaido but its charges are high — 80,000 yen (£260) per ton of batteries plus transport charges. Studies at the institute show, however, that setting up regional recycling plants with a capacity of 2,000 million batteries a year would at most add only Y10 (£0.3) to the cost of a battery. Such a move seems more likely to provide a practical solution to the problem than the call of the Ministry of International Trade and Industry (MITI) for research on non-mercury batteries.

Alun Anderson

## Radioactive waste

# Mongolian alarm at China's plan

CHINESE plans to act as a "nuclear dustbin" for Western countries have provoked a sharp reaction in the neighbouring Mongolian People's Republic. Alarm was crystallized last month in a formal interview, organized by the Soviet news agency TASS and its Mongolian equivalent Montsame, with a Mongolian physicist, Dr D. Dorjbat, who appears to have been selected as a mouthpiece of grass-roots scientific concern.

According to Dorjbat, the Chinese do not possess a highly developed nuclear technology, and so will not be able to ensure a reliable method of storing the wastes. Since they plan to bury them beneath the Gobi Desert, there is a serious risk of contamination of Mongolian as well as Chinese territory, through seepage of radioactive material in the groundwaters.

Dorjbat went on to discuss the political implications of the plan. The Chinese, he alleged, not only hope to obtain additional hard currency from the plan (their preliminary tenders offer to take up to 4,000 tonnes of waste by the end of the century thus earning \$6,000 million); they also want to process the waste into plutonium for nuclear weapons. Numerous "foreign experts", he said, have drawn the same conclusion.

Dorjbat made no attempt to explain how, at the same time, the technological level of the Chinese could be too low to deal with wastes but high enough to extract plutonium from those wastes. He seemed more at ease with his political statements, alleging that China is at present helping Pakistan to develop nuclear weapons (a claim which the Pakistanis vehemently deny). He also attacked the "disrespect" for the destiny and lives of the Chinese people shown by their leaders who, he claims, regard a nuclear war as winnable.

Beijing, so far, has made no direct reference to the allegations, but appears to be treating them as significant signals in the current war of words with Moscow. Within

a few days, *The People's Daily* carried what was clearly a direct refutation of the attacks on the waste disposal plan, affirming that Chinese technology was well-equipped to deal with all forms of nuclear waste, solid, liquid or gas. The more sinister charges that the Western wastes would be used as the raw materials for bombs was, however, pointedly ignored.

Vera Rich

## Moscow visit off

Washington

AMID continuing uncertainty about the health of Soviet physicist Andrei Sakharov and his wife Yelena Bonner, the US National Academy of Sciences confirmed last week that its president had postponed plans to visit the Soviet Union to re-establish formal links with the Soviet Academy of Sciences.

In a short telegram to A.P. Aleksandrov, president of the Soviet Academy, Dr Frank Press, president of the US National Academy, said talks on a new agreement were "impossible" given the deepening concern of American scientists over the circumstances of Dr Sakharov. The telegram added: "I have delayed until the last moment a final decision in the hope that the situation would be positively resolved in a manner that all of us would recognize. Since this hoped-for development has not occurred, I believe it is to our mutual advantage to postpone the visit of our delegation until a climate more favourable for positive discussions exists."

Although academy officials stressed that the decision to cancel the planned visit was taken by the academy alone, they acknowledged that Dr Press had consulted the government. The officials also stressed that the visit had been postponed rather than cancelled, and hinted that it could go ahead if the Soviet Academy showed signs of interceding on behalf of Sakharov and Bonner.

Peter David