sector benefited from them, directly or indirectly? Going further, we may observe with what implacability Western governments and businessmen tacitly insist that the alliances they choose with those with power in the Third World are shaped by their geopolitical and business interests, not by issues of human rights and social justice. People without power, even in their millions, are strategically unimportant and therefore ignorable. We may wonder further about the values of the world order when the major arms exporters are all members of the United Nations Security Council, with the United States and the United Kingdom first and second. The United Kingdom continued to sell arms to Saddam Hussein, whom it saw as a regional ally worth cossetting, even though he was known to be using poison gas on Kurdish towns. We could ponder whether Western leaders and businessmen have an ethical limit beyond which they would find that their dinner tasted funny, or that the sight of their children at play would evoke plaguing thoughts of their likely fate if they had been Kurdish or East Timorese or Salvadoran.

In Chile in the late 1980s a mass grave was located whose remains were eventually traced to 16 men abducted by security agents from a village in another part of the country in 1973, shortly after the coup (driven by the Central Intelligence Agency (CIA)) installed a military regime under General Pinochet.

Amid their grief the 16 widows were immensely relieved that their husbands were no longer just in their personal memory but had reappeared. As the remains were being disinterred for reburial at home, one of the widows said, "They may be dust but they are loved dust." The discovery added to the clamour for a full investigation into the fate of around 2000 others who disappeared in the same period. In Nicaragua the mother of Liset Jiron Romero was similarly concerned to show that Liset was not her private delusion or hallucination, not a ghost, but had definitely lived—until she was murdered because United States foreign policy decreed a war in Nicaragua, whose hallmark was atrocity. The struggle is to get the social order to own up to what is done to reduce human beings to dust, albeit loved dust, and to the uncounted others who are not even that, merely names in the mouths of those who remember. This is a struggle without end but one that cannot be shirked.

- 1 Summerfield D, Toser L. "Low intensity" war and mental trauma in Nicaragua: a study in a rural community. *Med War* 1991;7:84-99.
- 2 Harrell-Bond B, Wilson K. Dealing with dying: some anthropological reflections of the need for assistance by refugee relief programmes for bereavement and burial. *Journal of Refugee Studies* 1990;3:228-43.
- 3 Brinton Lykes M. Terror, silencing and children: international multidisciplinary collaboration with Guatemalan Mayan communities. *Soc Sci Med* 1994;38:543-52.

(Accepted 26 June 1995)

French Polynesia: a nuclear paradise in the Pacific

Hans Veeken

The land is like our mother. People come from the land.
We must always respect our mother, not explode bombs in
her belly
Our good way of life comes from the land.
Destruction of land will lead to destruction of life.

JACQUES IHORAI, president,
Evangelical Church of French Polynesia

"The nuclear testing ruined the country," says a French doctor. We met on the docks of Tahiti, watching Greenpeace's ship, *Rainbow Warrior*, depart for the atoll of Mururoa. "Not only by contamination of the environment with nuclear fallout or leakage of the residue in the bottom of the atoll, but far more by disrupting the social harmony of the country," he continues. "The country was self sufficient before the testing started; people subsisted on farming and fishing. Nowadays the state is entirely dependent on France. Imports exceed exports tenfold; it is an artificial state: approximately 15% of the population work as civil servants. Migration, loss of cultural values, degradation of agriculture, change in eating habits, prostitution, alcoholism, and mental illnesses are all the result of this. This country is addicted to France. Since the moratorium on the testing, the people have been forced to think of a future without France. Resuming the testing is like giving an addict who recently stopped using drugs another shot. France has the obligation to leave behind a state that is self sufficient and not a wreck with a long term legacy of nuclear waste. I can show you files of patients who died of radiation, but I guess you are more interested in public health aspects. Well, the cancer register you might look for doesn't exist: not kept, or hidden, who knows? Anyway, inaccessible for us. Don't forget that until 1984 most practising doctors here were military people. It is no coincidence that the doctor supervising the atolls of Tuamotu, where the test site Mururoa is situated, is still a military doctor."

French Polynesia is an archipelago of about 130 islands, situated in the Pacific halfway between Australia and South America (map). The territory covers an area as big as Europe. Although its population is only 200 000, the country is well known to the world, mostly for its paradise-like scenery. The crew of the *Bounty* simply refused to sail on and settled on one of the islands. Who has not dreamt of retiring on a distant atoll, inhabited only by some friendly natives, subsisting on fish and coconuts? Jacques Chirac's announcement of the resumption of nuclear testing on the atolls of Mururoa and Fangataufa, in the extreme south east of the archipelago, has stirred not only the archipelago but also the world.

As an overseas territory, French Polynesia has an autonomous government, but it depends on France for defence, justice, finances, and foreign affairs. The islands of the archipelago have a volcanic origin. Tahiti, on which half the population lives, is the largest. The smaller islands are atolls: the volcano sank and coral was deposited on top. This coral is visible as a rim above sea level, surrounding the inner lagoon. After Algerian independence forced France to stop nuclear testing there, the French decided that the Pacific was the most suitable place to continue, conducting 44 atmospheric tests up to 1976. Thereafter they performed 110 underground tests, drilling boreholes 800 metres into the basalt of the volcano. It is presumed that the nuclear waste after the blast remains safe in the basalt and does not migrate into the environment. Ironically, Mururoa means place of the great secret in the local language.

A child without an anus

We decided to visit the country to assess the effects of the testing on the health of the population and to see whether this necessitated a humanitarian response.

Médecins Sans
Frontières Netherlands,
PO Box 10014, 1001 EA
Amsterdam, Netherlands
Hans Veeken, public health
consultant
hq@amsterdam.msf.org

BMJ 1995;311:497-9

Mururoa: paradise?

REX FEATURES

Papeete, the capital, is a small town of about 40 000 inhabitants. It is difficult to keep a low profile. In no time at all the journalists are after us. Rumours pop up: we have been sent by the French government; we have boarded the Greenpeace ship *Rainbow Warrior* to sail to Mururoa. On the street I speak to a woman; she tells me that her child was born without an anus. "The child was operated in France, but I never got the results of the investigations. They keep the diagnosis secret, they hide the results, sir. There are more children born without an anus," she says.

I'm told by another woman that there are 15 000 handicapped people in the country. I try to calculate a figure for a quick reference, but who defines handicapped? "We can organise for you to meet people who still suffer from skin diseases, body pains, children with short arms, all due to the testing," a delegate of the local union tells me. I'm not really interested at this stage in a parade of incurable patients. It seems important to obtain objective data but it is difficult to break through the hysteria of the information.

The high commissioner promises openness; a visit to the site is, however, impossible at this stage. He hopes we understand. He explains some rumours. Radiation is higher in Europe; Australia is nearer to China (which also does nuclear tests) than to Mururoa; and there have never been illegal burials in France. In no time a couple of meetings with local authorities are scheduled. We visit the department of public health and ask directly about the rumours. Is the incidence of cancer higher due to the testing? Are evacuations to Paris done secretly? Are there more congenital malformations than in other countries?

The cancer issue would seem easy to answer, but not in Polynesia. "The register started in 1985; before that time no systematic collection of data existed," the official tells us. "But, no problem, if there would be more cancer due to radiation we would find out now, because it has a time lag of decades before cancers develop. Cancer ranks number two on the top five mortality but one should not forget that the population grows older; now the life expectancy at birth is 66 years for men and 72 for women. Furthermore, the lifestyle has changed completely." Indeed the number of obese people in the street is striking.

There is no register for congenital malformations in the country—difficult to believe for a country in which nearly all women deliver in hospital. If data for the general population are lacking, what about data for the groups at risk: the site workers, in thousands; the military; the people living on nearby atolls who have supposedly been exposed to high nuclear fallout during the atmospheric tests? "The surveillance of the

workers is the responsibility of the employer," states the official. He cannot provide follow up on the issue. "The follow up of the people on the nearby atolls is difficult. There has been considerable migration, how to find the original group? It is too expensive and laborious. We have more pressing issues to address. Road accidents are the number one killer, especially among the youth. In fact we have the highest standardised number of deaths due to accidents in the world. We work hard and we have made progress, but we cannot do everything at once. We have made good progress with health over the last few years."

Indeed, an extensive network of health posts covers all atolls. Most of the atolls are connected by a direct telephone system; if necessary, referrals by plane can be made. The country has 300 doctors and in Papeete there is a referral hospital equipped up to European standards. It seems, however, that the costs of this system are not sustainable without outside help. The contrast of the high level of care and the embryonic stage of data collection for the population at risk is striking and makes one suspicious.

A clinician we speak to later explains that there is serious underreporting of the number of thyroid cancers. "Thyroid cancer is far more common than reported and we definitely see it more than in France. This is not necessarily related to radiation but may be caused by goitre. Goitre has a high prevalence in the area; it already appeared in Gauguin's paintings."

15 000 litres of coconut milk

The next day we visit the nuclear protection and safety institute. "Surveillance is done of the environment and the food chain for the whole of Polynesia," the director explains to us. Later it turns out that they test food everywhere in Polynesia except for the test site. "The test site is not permanently inhabited and no food grows there," we are told. It still seems strange. We are oversaturated with figures. "One has to drink 15 000 litres of coconut milk from Tahiti to get the maximum intake of caesium 137." That seems difficult indeed. "The food with the highest radiation is being imported. Milk powder from Europe, contaminated after the Chernobyl incident, or mineral water with natural radiation yield the highest activity," he continues. The grays, curies, rems, and their modern successors sieverts and becquerels are all within reasonable limits.

Another representative walks in: "I have worked for over 20 years on the atoll and swum there every day in the lagoon." We understand that the dose of radiation due to underground testing, as they measure it, is minimal. But has it ever been measured by independent scientists? The three independent studies to investigate the atoll that have been permitted by France have all suffered from the same restrictions: too little time, limited access, and insufficient provision of background data. And what is the long term outcome of the nuclear residue in the bottom of the atoll? It is difficult to imagine what is actually tested; is the hole definitely sealed off, why don't they test even deeper than the 1000 metres they reach now, do they work on the cavity left by the explosion, are all the test holes connected? The answer seems too simple to be true: "The load is sealed off by the process itself and that is it." The opinion of the officials on the follow up of the workers is also simple: "We have no right to check on people after they quit their job. The environment is surveyed and as long as the radiation is within limits, there is no need to check the people."

The military doctor we spoke to is a nuclear specialist and he too is convinced of the minimal effect of the testing on the environment. "The levels are so low that we have problems with the threshold limits of

The test sites are in the southeastern part of the archipelago

our detection equipment. No, the environment will not suffer; there are even plans to make a national park of Fangatau—*the abundance of birds is striking.* What about the risk of cancer for the workers? “The risk with such a low dose of radiation is not known, but difficult to imagine,” he says. What about the follow up of the military? “There are only a dozen military people who received a maximum dose of 15 rem in one incident. Doctors, especially radiologists, obtain the most radiation in Polynesia.”

Safe enough for the Cote d’Azur?

Not being able to visit Mururoa, we try to visit a nearby atoll. “Does the boat sail regularly?” we ask a man from Gambier. “Yes,” he answers decidedly. “How often?” “Every month.” “And returning?” The man looks puzzled by the question. He shrugs: “The next month of course.” The journey is abandoned.

The rally tour of officials has rendered useful information. The actual radiation from underground testing seems small. But all these figures are provided by the authorities. Why don’t the authorities allow in depth research at the atoll by independent scientists? This could effectively counter all the hysteria. Greenpeace never got permission to measure directly around the atoll. Their flagship was blown up by the French secret service in 1985, leaving one crew member

dead (and the two secret agents sentenced to jail for 10 years). Many Polynesians say “If the testing is that safe, why don’t the French do it at the Cote d’Azur?” Minimal radiation into the environment doesn’t exclude all risk. In Chernobyl too the authorities would tell you that the risk was zero. The risk of an accident can never be excluded. In 1985 the load exploded halfway in the shaft at 400 metres; in 1981 a typhoon hit the island, throwing a cement slab, and the nuclear waste that was stored underneath, into the lagoon. The outcome of the nuclear residue in the bottom of the atoll on the long term is unpredictable. Will it not leak and contaminate the environment?

The lack of follow up of the people at risk is a serious omission. I cannot state that all tests should be banned—some people argue that the nuclear threat kept the postwar world in a peaceful balance. Minimal ethical standards should, however, be adhered to. Polynesians shoulder a heavy burden of the testing. In 30 years their society changed from a “subsistence paradise” to a money driven society dependent on France. Before, the inhabitants lived on fish; now croissants seem the staple food. This process has brought progress, but has it brought happiness? It is the moral obligation of the French government to pay attention to these aspects and invest in forming a stable society, instead of leaving behind—along with the kilos of radioactive material in the soil—a crippled society. Active follow up of workers and people being exposed to a high level of nuclear fall out at the time of the atmospheric testing seems indicated. This is extremely laborious but not expensive compared with the actual testing. If the French insist on continuing the testing they should take full responsibility for the programme and do everything to protect the local population from the side effects of a show they never asked for.

This article is a personal impression and does not reflect the official standpoint of Médecins Sans Frontières International.

(Accepted 31 July 1995)

A CHILD WHO CHANGED MY LIFE

The boy and the bomb

Just as Dr Hugh Jackson’s practice was changed by one child’s death (*BMJ* 1995;310:49), so my life was altered by the death of a boy killed by a V1 flying bomb in 1944. Although this did not lead me to become a doctor, I did eventually become a careers adviser; and over 28 years I must have aided the entry of some 200 students into medical schools.

In the autumn of 1944, when I was serving in civil defence in London, I heard our bell announcing “immediate danger overhead”—a warning of the approach of a flying bomb. Soon the roar of its ram jet cut out and the dive began; the V1 struck the road outside Kensal Green station in north west London, very near where I was stationed, and I was the first to arrive. The newspaper seller outside the station had been cut in half by the blast, and on the pavements nearby lay other casualties. As I was alone there were immediate dilemmas. On the pavement lay a soldier with wounds; next to him, stretched in the gutter, lay his son, a boy of 8. It seemed clear to me from previous experience that the boy was dead. There were three other casualties nearby needing urgent attention and I was still alone, so there was no chance then to make further checks on the boy.

The scissors had gone from the first aid kit, so I slit the soldier’s trouser leg with a knife and applied a shell dressing to a deep wound in his right thigh, and then safety pinned his fractured right arm in its sleeve to his battle dress to form a sling. The next casualty, with a long splinter of wood like a pencil protruding from his cheek, fought me with his fists as I applied a sterile dressing gently round the edge of the wound to help keep out

infection. He went with the soldier by ambulance to hospital. The other casualty was an elderly veteran from the first world war, who said that he was used to shell fire but had to be sent to hospital by ambulance for treatment for the effects of the shock.

We stayed on duty there for over 48 hours dealing with the aftermath. When I came off duty, again and again I saw the boy lying there. I wept then a great deal for the loss of the child and the thought that perhaps I had been wrong and, if he had been still alive but unconscious, I might have been able to save him. A few days later I went to see his mother. She asked me if I could try to get a pension for her. I rang the Ministry of Pensions but inevitably was refused because “at 8 he earned no money.”

In 1946 a soldier in uniform walked into the citizens’ advice bureau where I now worked, gave his name, and asked about clothing coupons. I remembered his unusual name and reminded him that we had met before. He said that as the smoke cleared he had been relieved to see me, and that the hospital had found 40 wounds. The doctor asked who had given the first aid. “Not bad,” he had said. I asked about his son. “Killed instantly by the blast,” he told me.

Those events, and in particular the death of the child, changed my aims in life. I became determined to abandon too grandiose ideals and to help one person, or group, at a time. Thus after university training and social work I embarked on work as a careers adviser, and have never forgotten that 8 year old boy.—PETER WILLIAMSON is a retired careers adviser in London