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Weapons Junkies

What has been Americas most nurturing contribution to the culture of this planet so far? Many would say jazz. I, who love jazz, will say this instead: Alcoholics Anonymous.

I am not an alcoholic. If I were, I would go before the nearest AA meeting and say, "My name is Kurt Vonnegut. I am an Alcoholic." God willing, that might be my first step down the long, hard road back to sobriety.

The AA scheme, which requires a confession like that, is the first to have any measurable success in dealing with the tendency of some human beings, perhaps ten percent of any population, to become addicted to substances that give them brief spasms of pleasure, but in the long term transmute their lives and the lives of those around them to ultimate ghastliness.

The AA scheme, which, again, can work only if the addicts regularly admit that this or that chemical is poisonous to them, is

now proving its effectiveness with compulsive gamblers, who are not dependent on chemicals from a distillery or a pharmaceutical laboratory. This is no paradox, Gamblers, in effect manufacture their own dangerous substances. God help them, they produce chemicals that elate them whenever they place a bet on simply anything. If I were a compulsive gambler; which I am not, I would be well advised to stand up before the nearest meeting of Gamblers Anonymous and declare, "My name is Kurt Vonnegut. I am a compulsive gambler"

Whether I was standing before a meeting of the Gamblers Anonymous or of the Alcoholics Anonymous, I would be encouraged to testify as to how the chemicals I had generated within myself, or swallowed had alienated my friends and relatives, cost me jobs and houses, and deprived me of my last shred of self-respect.

I now wish to call attention to another form of addiction, which

has not been previously identified. It is more like gambling than drinking, since the people afflicted are ravenous for situations that will cause their bodies to release exciting chemicals into their bloodstreams. I am persuaded that there are among us people who are tragically hooked on preparations for war. Tell people with that disease that war is coming and we have to get ready for it, and for a few minutes there they will be as happy as a drunk with his martini breakfast or a compulsive gambler with his paycheck bet on the Super Bowl.

Let us recognize how sick such people are. From now on, when a national leader, or even just a neighbor, starts talking about some new weapons system that is going to cost us a mere twenty-nine billion dollars, we should speak up. We should say something on the order of, "Honest to God, I couldn't be sorrier for you if I'd seen you wash down a fistful of black beauties with a pint of Southern Comfort." I mean it. I am

not joking. Compulsive preparers for World War 3, in this country or any other, are as tragically and repulsively addicted as any stock-broker passed out with his head in a toilet in the Port Authority bus terminal.

For an alcoholic to experience a little joy, he needs maybe three ounces of grain alcohol. Alcoholics, when they are close to hitting bottom, customarily can't hold much alcohol. If we know a compulsive gambler who is dead broke, we can probably make him happy with a dollar to bet on who can spit farther than someone else. For us to give a compulsive war-preparer a fleeting moment of happiness, we may have to buy him three Trident submarines and a hundred inter-continental ballistic missiles mounted on choo-choo trains.

If Western Civilization, which blankets the world now, as far as I can tell, were a person—if Western Civilization, which surely now includes the Soviet Union and China and India and Pakistan and on and on, were a person—we would be directing it to the nearest meeting of War Preparers Anonymous. We would be telling it to stand up before the meeting and say, "My name is Western Civilization. I am a compulsive war-preparer. I have lost everything I ever cared about. I should have come here long ago. I first hit bottom in World War 1".

Western Civilization cannot be represented by a single person, of course, but a single explanation for the catastrophic course it has followed during this bloody century is possible. We the people, because of our ignorance of the disease, have again and again entrusted power to people we did not know were sickies.

And let us not mock them now, any more than we could mock someone with syphilis or smallpox or leprosy or yaws or typhoid fever or any of the other diseases to which the flesh is heir. All we have

I From the Editor's Desk

Recently, there has been unusual interest in the Nuclear Non-proliferation Treaty (NPT) amongst commentators and think-tankers in India. Some have advocated that India should declare itself a full-fledged nuclear weapons state and join the treaty in that capacity. However, the debate has totally missed a most vital point.

NPT is based on false premises. When the treaty was first signed (July 1st, 1967), the nuclear haves asked the nuclear have-nots to forgo their sovereign right to make nuclear weapons. In return, the have-nots were promised the following:

- The nuclear haves were to 'seek* a comprehensive test-ban treaty and discontinue all (underground) nuclear weapons' tests.
- They were to negotiate among themselves with an aim to 'pursue' "in good faith" efforts towards reductions in their own arsenals.
- They were to refrain from threat or use of force on non-nuclear states in accordance with the U.N. charter.
- They were to cooperate in contributing to the further development of the application of nuclear energy for peaceful purposes including any peaceful applications of nuclear explosions.

Discussion on NPT in India has tended to concentrate on the failure of the nuclear haves to implement the first three points. There has been little or no discussion regarding the fourth point.

The experience of the last 25 years of "application of nuclear energy for peaceful purposes' has shown that nuclear energy is a poisoned source of power and its use has to be abjured by all if we are to preserve the planet for future generations. The sufferings of the people of Kazakh istan and the Pacific bear ample testimony to the 'benefits' of 'peaceful nuclear explosions'.

No self-respecting state can sign the NPT. India has no need to emulate others who have done so. Of course, it is moot question whether India is any longer a self-respecting nation which can make up its own mind on issues of vital concern. But not signing a patently discriminatory treaty does not mean that we should continue the present bankrupt policy of nuclear ambiguity.

Nuclear weapons are weapons of mass destruction. Their use or threat of use is only to terrorise the adversary. States possessing these weapons are truly 'terrorist' states. The correct way for other countries in the world community to deal with these bullies is to recognize them for what they are and to ostracize them. One certainly can not deal with terrorism by aspiring to become a terrorist oneself.

to do is to separate them from the levers of power, I think

And then what? Western Civilization's long hard trip back to sobriety might begin.

Kurt Vonnegut Jr
The Nation January 7, 1984).

Lest We Forget

Images of Hiroshima

An eighty-year-old woman of Mitaki township in Hiroshima lost her husband in the "flash" of the bomb; day and night she still tells her grandson Tomekichi the "flash story" like a thread woven in childhood.

*It was just like hell—a procession of ghosts, a sea of flames. But I didn't see the devil, so I thought it was something happening on this earth....
An atomic bomb doesn't just fall; someone has to drop it.*

In the central bombed area, there were "two feet of a victim whose body had vanished in a single puff; they stood upright, stuck to the concrete road. Again, strangely, "in a streetcar a young girl lay dead, head to head with a dead, charred-black soldier; uninjured but with torn clothing, she still clutched her purse." But, "not a soul remained to tell us what happened at the center of the bombed area."

In the pond of the Sentei (Asano Mansion), live carp were swimming among the dead bodies.

When I came to my senses, I found my comrades still standing erect and saluting; when I said, "Hey," and tapped their shoulders, they crumbled down into ashes.

Food was distributed to the A-bomb victims. An old woman's grandchild was standing in line to receive rations. "In front of my grandchild, there was a young near-naked girl. After receiving rations for five persons, she fell forward on the ground and lay motionless/*

In the home of a sick soldier, his young wife was crushed between large, heavy beams, still holding her child in her arms. A man from next door tried to rescue her, but the beams were more than one man, or even two, could lift. Wanting to save her child at least, he cried, "Quick, give me the baby." But she said, "No, let us die here together. My husband is already dead, anyway. I can't leave this child alone. ..Hurry up! Escape while you can."

A mother in Mitaki township, who lost her husband in the atomic bombing, carried on her daily work valiantly; but on her arm where skin from her hip had been transplanted, the scar tissues continued to contract in autumn and winter, causing intense pain.

Everyone gathered at some stone steps and sat down. They included a woman losing her sight in one eye, a man getting sicker by the minute, another with a fierce headache. Everyone had external and internal injuries, but no one

cried out in pain. Almost everyone was silent

It was a cruel and complete silence, worse than any other, like "a moan that cannot be voiced."

I ran to wan! Tsurumi Bridge, jumping over stones and fallen trees as though I were mad. What did I see there? Countless people were struggling to get to the stream under the bridge. I could not distinguish men from women. Their faces were swollen and gray; their hair stood on end. Then, raising both hands skyward and making soundless groans, they all began jumping into the river as though competing with one another.

The concrete wall opposite me had big, gaping holes in places. I approached it because some low, dark figures seemed to be sitting in a row at its base. I could hardly tell man from woman or child, nor could I distinguish their ages. They were all but nude, sitting in a line, and their faces and bodies had swelled up and turned brown, as if by common consent. One had already become blind. Then I noticed a baby on someone's knee; the skin of its back was hanging down, as if a rotten, reddish loquat had been peeled off all around. Instinctively, I turned away from the sickening sight. They were all motionless and kept a strange silence. It seemed that the question of life and death was yet unsettled for them. I shuddered at the thought

of being loaded on a truck with these people.

Soon she lost consciousness. When, a full day later, she regained consciousness, a new realization swept over her: "I'm blind." / tried to raise my hands, but my right hand was heavy and beyond my control. With the fingers of my left hand I touched my face lightly; my eyebrows, my cheeks, and my mouth felt like a mixture of bean curd and gelatine. My face was swollen, like a big sponge; it was as I had no nose. I shuddered as I suddenly remembered the spooky shapes at the foot of the concrete wall."

The other side

For my part, however, I was within 1.5 kilometres of the hypocenter at bombing time and suffered only slight exposure symptoms, and am at present in relatively good health. Moreover, my parents, my wife — who at that time was a second year student in a girls' high school and was equally exposed to the bomb — and my three children born in the decade 1955-1965 are all in good health. I therefore tried to be as optimistic as possible, so long as no further ill effects appeared.

I have long wondered why virtually all of the "A-bomb literature" consists of stories of the miserable people who have not recovered their health, as well as the descriptions of radiation symptoms and psychology of the A bomb survivors.

Why are there no stories of families who endured hard times, but recovered their

health and now live as normal human beings? Must all survivors eventually meet a tragic death caused by radiation aftereffects? Is it not possible for the victims to overcome their illnesses, and their psychological anxieties and die a natural death like other people? Must four deaths be used as data for opposing atomic bombs?

Undeniably, our lives were distorted and tormented by the bomb. Yet many other people, though they did not experience the atomic bombings, nonetheless endured the war and knew suffering of varying degrees. Therefore, I am determined not to indulge myself in the victim complex that some victims in Hiroshima have developed. I want my body and soul to recover.

From Hiroshima Notes
by Kenzaburo Oe (1965)

Unabated Suffering

Hibakusha is the Japanese word for the atomic bomb survivors. This article which has been excerpted from a long paper presented at the IInd Radiation Victims Conference at Berlin last year details their present suffering.

We questioned 1233 Hibakusha whose mean age was 59.5 years, 1985-90. According to our investigation of the Hibakusha, more than 50 percent of those surveyed underwent repeated hospitalisation. More than 90 percent of those surveyed were under treatment at the time of the survey which was two and a half times higher than the standard rate for other Japanese of the same age group. Incidence of lumbago (28.4% among the Hibakusha) is 3.6 times higher than the corresponding standard, hypertension (23.9%, 1.7 times), ocular disease (18% 5 times) neuralgia and myal-

gia(12.3%, 4.7 times), anemia and leukopenia(12.1%, 13.4 times), gastritis (9.9%, 4.5times), gastroduodenal ulcer(9.8%, 4.7 times), ischemic heart disease (9.8%, 4.7 times), liver disease (9%,6.4 times), diabetes (8.2%, 2.7 times) and others are relatively high, as well as high incidences of cancer and leukemia that are well known to be caused by radiation? These higher incidences strongly suggest that such general diseases are related to the radiation exposure of the A-bomb.

The high incidences of medical treatment found in the Hibakusha

of Hiroshima/Nagasaki cannot be explained by mere stress. The high rate should be regarded as an indication that they were really ill because of radiation exposure.

We find similar results to ours indicating high incidences of diseases like hypertension and liver disease other than cancer and leukemia, in investigations undertaken by other groups previously. In a paper undertaken for "the NGO's symposium on the problems of the Hibakusha, 1977", the authors investigated 715 Hibakusha and reported the higher incidences of disorders of blood and Bone mar-

row, circulatory system, gastrointestinal system, and skin and subcutaneous tissue, compared to the general Japanese people. The incidences of these diseases are higher especially among the Hibakusha who had acute radiation injuries. In another investigation undertaken during 1985-86 by the "Japanese Council of Hibakusha", 13169 Hibakusha were investigated whose mean age was 62. The result indicated that the incidence of arthritis, lumbago, and rheumatism (41.3% among the Hibakusha, 3.9 times higher than general people), hypertension* and ischemic heart disease (36.5%, 2.3 times), cataract and ocular disease (20%, 5.6 times), skin disease (17.9%, 10.5 times), blood disease (17.5%, 19.4 times), gastroduodenal ulcer (14.9%, 10.5 times), liver disease (14.8%, 10.6 times), and diabetes (12.3%, 4.1 times) were high among the Hibakusha.

Moreover, statistics from 1968-82 about the cause of death of survivors of Hiroshima show that the number of deaths due to general health disorders such as tuberculosis, diabetes mellitus, blood/bone marrow disease, hypertensive disease, and liver cirrhosis are significantly larger among the Hibakusha, compared to general population.

Genbaku Bura-Bura disease

Many Hibakusha have frequently complained of such subjective symptoms as tiredness, vertigo, palpitations, lumbago, back pain, stiff shoulders and neck pains. These symptoms have collectively been called "Genbaku (atomic bomb) Bura Bura (lingering) disease." We believe that this is an important syndrome that should be regarded as a result of radiation exposure: A similar syndrome was reported also among the Chernobyl children.. These symptoms should not be ignored by ascribing them to mere stress.

Characteristics

The lingering disease consists of many symptoms that indicate a general damage of physiological functions. Characteristics are divided into various categories: general symptoms such as tiredness and fatigue, indication of damage to the immune system (easy to catch colds, etc.), those of the autonomic nervous system related to the control of whole internal organs, including the circulatory system (vertigo, palpitations, etc.) and those of the nervous and motor systems (stiff shoulders, neck pains, headache, lumbago, back pains and numbness of limbs). Our survey of the history of the disease and lives of the Hibakusha showed that the appearance of the symptoms in the period of a few to 10 years after the A-bombing is somewhat different from that at present. The lingering disease in the early stages was more severe than now, and, in extreme cases, symptoms suddenly becomes so serious that patients were bedridden. Such cases are rare, and the symptoms seem to be chronic today. We are taking medical care of the Hibakusha in our hospital and we often see among them health disorders showing such conditions as, liable to catch colds", "susceptible to illness", and "difficult recovery from ill health".

Correlation between symptoms and radiation exposure

The following findings* suggest a correlation between symptoms and radiation exposure:

- The rates of subjective symptoms found among the Hibakusha are higher than those found in the general population.
- ◆ Those who suffered acute symptoms after the A-bombings (i.e. those who received

high doses), show a higher level of bura-bura symptoms.

- Similar symptoms are common among nuclear power plant workers exposed to radiation.
- Similar symptoms are seen among radiation victims in other countries.

Total Neglect

The name of the syndrome, bura-bura disease, reflects the fact that most hibakusha always felt very lethargic. Because many of them looked healthy enough on the outside they were regarded as habitual malingerers and discriminated against by the society. Many committed suicide to avoid the stigma and after repeated rejections in the marriage and job markets. The Japanese government did not provide any financial or medical support to the Hibakusha for more than ten years after the atomic bombings. It was only after a public movement that a law giving relief to the Hibakusha was enacted.

Never Ending Saga

A health survey of the second generation of the Hibakusha in Nagasaki revealed high rates of sickness. The mean age of the group of 1023 persons investigated was 31 years. 22.8% said that they were taking treatment for some disorder at the time of the investigation which is twice as high as the rate in the general population of the same age group.

We demand that a "national compensation law" be enacted for the Hibakusha including the second and third generation victims. We want to join hands with the world wide movement of radiation victims.

Of Katsumi Funstu, Kazue Sadamori,
Masako Inornata, Dr Saburo Murata
Haman Chuo Hospital

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The Price of Greatness

The author of this article, Sam Day is a person with an immense amount of common sense. Although at first glance this article has very little to do with Anumukti, we are reproducing it in full since the mindset it describes, is not confined to U.S. alone but applies equally well to the people in the corridors of power in Delhi. Happy would be the day when we in India would give up notions of being a regional power and look deeply into what constitutes real greatness.

Studente, professors and practitioners of American foreign policy often use the term "Great Power" in referring to the role of the United States and a few other nations on the world stage. They think of this country not only as a Great Power but as the last remaining Superpower.

I was reminded of this by Secretary of State Warren Christopher's explanation of the Clinton Administration's decision to involve the United States in settlement — including use of ground troops, if necessary — of the war now ravaging what used to be Yugoslavia. No Great Power, said Christopher, could stand aloof from conflict or instability in such a strategic part of the world.

What is a Great Power, I wondered. What distinguishes the great power of U.S.A. from the lesser power of the other nations? What does it mean to be a Great Power, and what are the costs and benefits of this special status?

Being citizens and taxpayers of Great power, it seems, means that Americans—rather than, say, New Zealanders—get to kill and be killed in separating the blood-feuders in Europe's ancient Balkan tinderbox.

It means that Americans—rather than, say, Swedes get to continue picking up the \$50-billion a year U.S. share of the tab for maintaining the North Atlantic Treaty Organization (NATO), the base for

the military operations in Europe and the Middle East as well.

It means the United States and not the Dutch or Canadians or Cubans, get to send our carrier battle groups and floating marine battalions to the Adriatic Sea, the Indian Ocean and the Persian Gulf to ensure stability in those far-flung regions.

It means the United States, not Japan or Australia, gets to fly the flag and carry a big stick at Singapore, where Britannica once ruled the waves at the crossroads of the Far East.

For Warren Christopher and others in the foreign policy establishment there are obvious benefits from being a Great Power. In foreign ministries a representative of the United States carries a bit more clout than someone from Denmark or Belgium.

Two other categories of beneficiaries come to mind. Materially, there is the military-industrial complex, which depends on the hundreds of billions of dollars a year needed to nourish great powerdom. Spiritually, there is the satisfaction many derive from the sense of being associated with Number One.

What are the costs of being a Great Power? They have been encountered through the centuries by countries—Rome, Portugal, Spain, Britain—that rose and then collapsed as Great Powers, exhausted by the burdens of empire, For the

United States today the costs are apparent in a crippling national debt, federal budget gridlock, deteriorating economic competitiveness, collapsing infrastructure, eroding social services...

Every lesser power cited above—New Zealand, Sweden, Holland, Cuba, Canada, Norway, Denmark, Japan, Australia, Belgium, Luxembourg—now leads this Great Power in the quality of the social safety net available to its citizens, child care, and protection of the old and infirm.

We have a lot to learn from these lesser but wiser powers—poorer in guns but richer in their quality of life about what really constitutes greatness.

Sam Day
Nukewatch

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Uranium, Plutonium, Pandemonium

Two years ago, The Economist magazine from London was waxing eloquent about "the charms of nuclear power". The present article shows that even die-hard true blue Tories are capable of appreciating reality when it comes and bludgeons them on the head. There are no easy answers to the dilemmas posed by nuclear power. Even disarmament has a dark side. It sets free nuclear explosives that used to be tucked away in superpower arsenals, and must now be disposed of

There are various recipes for making nuclear weaponry. Some can be carried out only by experienced master bomb makers. Others are easy enough for beginners to have a go at. All of them, though, contain ingredients—plutonium or highly enriched uranium (HEU)—that have always been very hard to come by.

It is the possession of these nuclear materials, more than know-how about their use, that separates, the Israelis from the Iraqis, or the Indians from the Iranians. Making them is hard, and requires the sort of efforts only rich countries or desperate ones will undertake. Even with money and will, a uranium-enrichment programme takes time to build, and might easily be detected by others. The cost of making materials for nuclear weapons, and the risk of being caught in the act, are the biggest obstacles facing countries tempted to gate-crash the nuclear club.

Mindful of this, countries with nuclear weapons have developed elaborate systems to guard plutonium and HEU. But the authoritarian mechanisms that guarded Soviet nuclear material can no longer be guaranteed. Nuclear smuggling is already on the increase. The number of reported cases rose to over 100 last year, compared with 35 in 1991. So far the contraband is low-grade stuff, from industrial sources, not weapon-grade materials. All the same, smuggling routes are being established that could serve more dangerous trades and customs

authorities are beginning to be

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The number of reported cases rose to over 100 last year, compared with 35 in 1991. There have already been more than 50 attempts to extort money from America with nuclear threats, some frighteningly credible.

The mere possibility of a black market in weapon-grade material is terrifying. Instability would spread like a chain reaction. Countries newly unsure about their neighbours' capabilities would find themselves ever more tempted to try to get a bomb themselves. Terrorist groups, kept from the nuclear game by their lack of industrial infrastructure could become players. Exploiting these fears, nuclear Blackmailers could make a mint. There have already been more than 50 attempts to extort money from America with nuclear threats, some frighteningly credible. The people who decide whether to believe them or not have been able to check their own stocks quickly, to make sure no bombs or material are missing. Such checks will be less reassuring if the world's supplies become more accessible and, alarmingly, less well documented.

The Soviet syndrome

The break-up of the Soviet Union has fractured the brutal certainties of the cold-war nuclear regime. Roughly 3,000 weapons in Ukraine, Byelorussia and Kazakhstan are now less firmly in the grip of the top brass in Moscow. Ukraine has been reluctant to honour its* pledge to relinquish its arsenal. Whether or not these, countries have nuclear ambitions, there are worries about security on their soil. One Russian officer in reported to have advised his western counterparts to "take seriously" rumours that three or four weapons have disappeared in Kazakhstan.

In Russia itself, the nuclear industry that once supported whole cities, such as Chelyabinsk east of the Urals, and Tomsk and Krasnoyarsk in Siberia, is facing a crisis. Grandiose Soviet schemes for nuclear power have been replaced by Russian realities. Thousands have lost their jobs. The chances of a foreign country finding a Russian engineer ready to sell nuclear advice or materials are growing.

Disarmament treaties between America and the former Soviet Union could further strain the regime for guarding weapons materials. Roughly six tonnes of plutonium and 30 tonnes of HEU are due to be released annually over the next 15 years as Soviet warheads are scrapped. Many western sources believe that there is no reliable overall inventory system to keep track of this material.

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All this is happening against the background of a worldwide accumulation of civilian plutonium. Plutonium is not found naturally on earth, but it is produced whenever uranium is used in a nuclear reactor. Military production reactors are designed to burn fuel in short bursts and thus maximise the production of a particular isotope of plutonium, ^{239}Pu . Civilian reactors, designed to produce power, use their fuel for longer and so produce heavier isotopes, ^{240}Pu and ^{241}Pu . To get the plutonium into a usable form, the fuel has to be "reprocessed".

The bombs in today's stockpiles contain almost pure ^{239}Pu . The other isotopes mess up the workings of the nuclear reaction. But isotopically impure plutonium produced in civil reactors can be made into bombs; American scientists at Los Alamos National Laboratory have tried it, and it worked. According to Frank Barnaby, once director of the Stockholm International Peace Research Institute, 'it takes about 35 kg (77 Lb.) of civil plutonium in its oxide form to make a bomb, whereas a mere 5 kg of good military metal will suffice. Despite being larger, bombs made from civil plutonium will have low, unpredictable yields, especially if inexpertly designed and assembled. But terrorists do not need the power, precision and elegance of a high yield weapon that fits on a missile. Low-yield bombs in lorries could serve their purposes, demolishing a fair fraction of a city and spreading fall-out far and wide.

Gelger counter

The first convincingly reasoned inventory of the world's nuclear material was published earlier this year. Working from a variety of sources, public and private, the authors conclude that there are roughly 1,000 tonnes of plutonium and 1,500 tonnes of HEU. Because of the doubt attached to their es-

timates, they want all governments to publish their inventories and submit them to international supervision.

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At the moment, international supervision is woefully limited. Only 1% of the world's HEU comes under the safeguards administered by the International Atomic Energy Agency, that is mostly used to power small research reactors in countries that have no nuclear weapons. Almost all the rest, 95% of the total, is held by the American and Russian armed forces. It is not all in weapons; as much as 100 tonnes of Russian HEU is used simply to power ships and submarines. A tiny fraction of this amount could be the basis for a successful third-world weapons programme. A mere 130-220 kg of HEU, accumulated in its own enrichment programme, has made Pakistan a nuclear power. This is 0.01% of the world's total stock.

By contrast, most of the world's 1,000 tonnes of plutonium are in civilian hands-though only 30%, that in Britain, France and the non-nuclear states, is under international safeguards. More than half of this plutonium is sitting in used fuel-rods from commercial reactors, unusable for anything until it is reprocessed. But stocks of civil plutonium are flowing forth from reprocessing plants ordered during the 1970s. These plants were supposed to provide fuel for a new generation of "fast" reactors which would burn plutonium, but

neither the demand for nuclear power nor the performance of fast reactors has met the planners' expectations, and the cost of uranium fuel has dropped. Most of the reprocessed civil plutonium-7 2 tonnes-is sitting in storage.

And yet reprocessing will continue. Billion-dollar reprocessing plants have been built in Britain and France. It is hard to resist the pressure to use them, especially as some nuclear-power generators have tied themselves into long-term reprocessing contracts. When they did so, they hoped that reprocessing could cut the cost of disposing of nuclear waste. That claim has not been borne out for today's designs, but such contracts cannot easily be broken. So on current plans the reprocessing plants will separate an average of 21 tonnes of plutonium a year over the next 20 years. By 2010 a total of 545 tonnes of plutonium is due to have been separated. Most of this plutonium will be produced in Britain and France, though some could also be separated in Russia and possibly Japan.

When it comes to military plutonium, America and the former Soviet Union have the lion's share: some 250 tonnes between them. Again, small amounts can have striking political consequences-witness Israel and India with about 300 kg of plutonium each. Russia and America both say they need no longer make military plutonium. And yet, even as military production stops adding to the total amount of nuclear material in the world, plutonium and HEU from dismantled weapons will add to the stocks.

The danger of disarming

The former Soviet Union has more bombs to dismantle-at least 33,000 weapons in all. The reason the Russians have so many is that fresh plutonium slowly undergoes radioactive decay, making it un-

predictable in warheads. America solves this by recycling old material, chemically extracting impurities, occasionally going so far as to make "ivory" plutonium, almost pure ^{239}Pu . As a rule, the Soviet Union did not refresh its plutonium. Aging weapons simply got put into reserve, replaced by warheads full of plutonium fresh from the reactor.

The differences in design account for some of the differences in safeguards. With most of the Russian plutonium in weapons, either ready for service or held in reserve, control of materials could be maintained by locking up bombs. In America, partly because of more recycling, safeguards depended more on full accounting for the nuclear materials themselves as they passed through the long and complex procedures. A greater distinction between the two systems of safeguards, though, lies in their psychology. The Soviet system, confident in its control over its own people, saw threats coming from outside. In America treacherous and corruptible insiders have always been seen as a potential danger.

The snag with disarmament, for all its other merits, is that it disrupts the established Soviet routine. The chart shows how much plutonium and HEU might be released from warheads if the INF and START disarmament treaties are implemented. Weapons will be broken open and the plutonium and uranium stockpiled or processed. This material will be passed to civilian inventories controlled by Minatom, the ministry of atomic energy; counting bombs will give way to accounting Cor material. There is no systematic connection between, the two inventories. Gosatomnadzor, the regulator which was given responsibility for civil and military materials last June, has been refused access to some military inventories.

The great bonfire

The HEU that gets to Minatom can, eventually, be burnt in commercial reactors. Uranium comes in two isotopes, ^{235}U and ^{238}U . It is ^{235}U that releases energy; but 99.28% of natural uranium is ^{238}U . For this natural uranium to be made more potent it must be enriched in ^{235}U , which means sorting through the uranium and discarding some of the ^{238}U . A little enrichment—to a ^{236}U content of 2-6%—is good enough for most reactors, though some can work with unenriched uranium and some research reactors use highly enriched uranium. The HEU in weapons is usually enriched to 94% ^{235}U .

Enrichment is hard, which is why bomb programmes are rare. Reversing it—diluting HEU by adding less enriched uranium—is easy, and America is making it profitable as well. America has agreed to buy Russian HEU diluted for commercial use. It is set to pay \$780 a kilogram for material blended to a concentration of 4.4% ^{236}U , a price competitive with that of enriched fuel. A total of 500 tonnes of HEU will be blended into 15,000 tonnes of fuel, which makes the deal worth \$12 billion.

The Uranium Institute, based in London, has calculated that the 816 tonnes of HEU that might be released from American and Soviet disarmament could take the place of 166,000 tonnes of natural uranium, roughly three years' worth of world demand. This is a headache for the world's uranium producers, which are already suffering from depressed uranium prices. For everyone else, though, it is a blessing: once blended, the uranium presents no more threat than any other nuclear fuel. It would be no easier to enrich than any other reactor-grade uranium.

If only it were as simple for military plutonium. But the world

has a surplus of plutonium, even without extra supplies coming from disarmament. And there is no commercial plutonium-fuel industry equivalent to the uranium-fuel industry into which diluted HEU so neatly feeds.

Many bright and failed ideas looking for a second lease on life are being put forward as ways of converting weapons' grade plutonium into a form too awkward for the weapon-minded to bother with. One such scheme would mix the plutonium with nasty but useless nuclear waste and seal it in blocks of glass. Most of the rest would help pay for disposing of the plutonium by generating electricity from it while turning it into waste. France has thought about reviving *Super-phoenix*, its experimental fast reactor, which was shut down after technical mishaps. General Atomics, based in San Diego, has floated a plan for a \$1.5 billion helium-cooled reactor—a novel design it has long wanted to build.

There are other, more radical designs. One is a molten salt reactor. Liquid plutonium is squirted in, waste is siphoned off. Scientists at Los Alamos have suggested using particle beams to help burn up the plutonium, rather than relying entirely on particles given off by a chain reaction going on within the material; they think it would be like holding a flame underneath the plutonium, rather than starting a dangerous plutonium blaze.

A study of different ways to burn up plutonium by America's Lawrence Livermore National Laboratory came out against such cleverness, at least as far as using up America's surplus plutonium is concerned (though it did recommend more research into a few). Not only would these novel reactors take too long to develop, but the electricity that comes from them will, in most cases, be needlessly expensive. Instead the study

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prefers a proven technology known as mixed-oxide fuel, or MOX,

The idea is to take plutonium and mix it with unenriched uranium. Since ^{239}Pu acts like ^{235}U , the end result is quite like the low-enriched uranium used as reactor fuel. The idea dates from the 1950s, when it looked as if there would be plutonium left over from the fast-breeder reactors that were being planned—reactors which could produce more plutonium than they consumed. Under such conditions MOX made sense. If you have to pay to reprocess the plutonium from spent fuel, though, it does not. An OECD study in 1989 found it unlikely that MOX could compete with uranium under realistic circumstances. According to the fuel-cycle manager of a large German power company, it is twice as expensive as uranium. Even with free plutonium, MOX is unlikely to be cheaper than making uranium fuel from scratch unless uranium prices soar. Some MOX fuel has been made—the lack of an economic rationale has never stopped the nuclear industry trying things—but as yet it has used up only 12.5 tonnes of plutonium.

Now disarmament and reprocessing are bringing about what fast reactors never did: surplus plutonium. MOX would be a relatively safe way of disposing of the stuff. Moreover the Livermore study concluded that it would be easy to adapt designs for tomorrow's reactors so they could burn MOX exclusively—rather than a mixture, one-third MOX

and two-thirds uranium, as is the practice today. Given free plutonium, the report says that such a plant could generate electricity at 3.1 cents a kilowatt hour (kwh), compared with 3.0 cents a kwh using uranium fuel in a standard reactor.

"The lack of an economic rationale has never stopped the nuclear industry trying things"

Unfortunately there is not enough capacity in MOX factories to turn the weapons surplus from both superpowers into fuel. And governments have not licensed enough MOX-burning reactors to absorb the plutonium coming from reprocessing plants, let alone tonnes of weapon-grade plutonium as well. According to the authors of the inventory, even the most optimistic projection — which, incidentally, takes no account of military plutonium — sees plutonium stocks growing from 72 tonnes in 1990 to 113 tonnes in 2000, before decreasing to 36 tonnes in 2010, as MOX fabrication and fast reactors take off.

As a matter of course, many will protest about shipping and flying civilian plutonium around the world in large volumes. Terrorists will not be among them. Some of the planned M@X factories will probably fail to get approval; reactors will be refused licences to load MOX into their cores. In Germany and Japan, where reprocessing nuclear waste has been a requirement, using the plutonium

produced seems less popular, several utilities are having difficulty securing licences to burn MOX. A projection that takes account of some of these factors sees civil plutonium stocks growing to 265 tonnes by 2010.

The commodity from hell

The problem is not just that MOX reactors provide only a narrow channel for disposing of military plutonium, or that the channel will be clogged by the plutonium from uneconomic civil reprocessing programmes. It is that these programmes, and the plutonium economy they seek to bring into being, encourage the Russian nuclear industry to think of plutonium as valuable. Far from talking of the plutonium problem, desperate Russian nuclear engineers, encouraged by the plutonium industry in France and Britain, want to begin a new programme to build fast reactors running on plutonium, undaunted by difficulties the West has had with such technology.

Even if it were technically possible, Russia does not have the money to do it. The alternative, when plutonium is seen as a fuel, is to load it into existing Russian reactors, unused to the stuff and already regarded as unsafe by outsiders. Either way, as long as reprocessing plants make plutonium look like a commodity, the risk that the wrong people will buy it remains.

The Economist June 5, 1993

! Letter Box

so great as to counter balance the great danger of radiation. If not, why take all this risk,

R. K. Patil
Civil lines
Nagpur

The article presented in the special issue on Rawatbhata (April/May 1993) is systematic, authentic and full of information—However, I feel that no definite conclusions can be drawn on the basis of the survey observations. What the survey does is to provide

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a foundation on the basis of which further studies can be initiated. Simultaneously, efforts can be started for the control and treatment of those diseases in which increases are seen.

As the survey showed, the incidence of diseases is greater in the proximate area. A deeper study of congenital deformities, skin diseases and solid tumours could be extremely useful. For such a study it is essential that the doctor be in constant touch with the community. Cause-effect relationships can be established only when field experiences are examined in the spirit of research.

New conditions of existence are causing various kinds of effects. There have been changes galore in psychology, living conditions, food habits, types of work, standards of what is considered good or bad, status symbols, etc. As a result of these changes, the extent of diseases have been increasing and the disease pattern has been changing. We have not found any correlation between the availability of health services and a decrease in ill-health. Today's health care system is commercial. Patients too equate more expensive treatment, immediate relief, absence of

restraints on diet, with better treatment. This means far too many variables and makes the task of analysis all the more difficult. The effort at analysis can be put in but only if the sufferers cooperate.

A great deal of glitter is associated with large projects. People want to be associated with 'new' schemes. They try to maximise their 'profits'. The spirit of sacrifice for larger benefit of the society is lacking. We too live in an area which is affected by a host of large projects. Every day new health problems occur. Change is taking place so fast that there is no time for reflection and analysis.

Or Rogini Piem
Banvasi Seva Ashiom
Govindput Dist Sonbhadra U P

I do not wish to continue my subscription for *Anumukti* henceforth. I can understand the safeguards against nuclear follies. But to accept absolutely non-nuclear India appears to be a very retrograde step. The whole Narmada Bachao movement has revealed to me the most nauseating aspect of the parochial anti-Gujarat, movement of the so-called objective people. Sharad Pawar said the other day,

"if any body stops me from building dams on Krishna river I will not tolerate it." Pray, why single out Gujarat? We want to preserve tribal music and poetry but not their hellish lifestyle.

Meghnod Shalt
3 Sahokui
Jelly Gully Andher Bomboy

The Rawatbhata special issue (April/May 1993) was done very well indeed! As I am a fairly new member, may I suggest that you enclose a rough map of all Nuclear installations in India with a short note on each. When each was installed and how they are running and how much/little they benefit those that they were supposed to benefit and the destruction they have caused to the environment. This will give one a bird's eye view and be the basis for our strong protests against them. I trust I am not asking for the impossible, but I would like to have something concise to show people who, through facts and figures, understand the irreversible damage these nuclear installations are creating.

Pareen lakako
Avasa House. Darbash one
Bombay

Abolish The IAEA

Anumukti strongly endorses the stand taken by War & Peace Digest and Anti-Atom-International regarding the IAEA and we urge our readers to send letters to politicians asking for reform in the structure and functioning of this United Nations' agency

Of all the anachronisms still abroad in the world few have such dangerous consequences as the International Atomic Energy Agency (IAEA).

Following the trauma of the bombing of Hiroshima and Nagasaki, the nuclear establishment sought to redeem the atom by promising a cornucopia of

civilian benefits in medicine, food preservation and "energy too cheap to meter." This was the "Atoms for Peace" program. And of course, the nuclear industry urged the development of bigger and letter" bombs to make the world safe from war.

It was in the spirit of such gung-ho nuclear enthusiasm that the In

ternational Atomic Energy Agency (IAEA) was founded in 1967, enjoying a 'special relationship' with the United Nations, and committed to the active promotion of nuclear power in all its forms. It was the only U.N. organization committed to the promotion of a particular energy system. Its annual \$186-million budget is derived from 112 supporting governments.

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APPEAL FROM AUSTRIA

Wip-
s for
a reform of
the
IAEA as described below:

Since 1957, when the IAEA was established, the world and its view of nuclear energy has changed. It is time for a change of the IAEA's function, too. The IAEA should become a purely nuclear control organization without any promotional function.

Nuclear power cannot solve world's energy problems. Therefore a "United Nations Agency" for the promotion of nuclear power is obsolete and counterproductive. In this sense, the articles 2 and 3 of the IAEA's statute have to be changed.

The use of nuclear energy for peaceful purposes and the development of atomic bombs are inseparable. The spread of peaceful nuclear technology led to the proliferation of atomic weapons technology.

The NPT was an attempt to stop this development, but it failed because of the limitations in the safeguards regime. In 1995, the parties of the NPT have to decide whether to extend the NPT or not. We think the NPT should be extended - but not without changes.

The NPT should become an effective instrument of nuclear disarmament and non-proliferation:

Establishing of the IAEA as an organization for the effective and comprehensive control of fissile material—both civilian and military—and extension of its related possibilities and competen-

The application of safeguards to all states without discrimination.

D article 4
NPT.
(Promotion of atomic energy for peaceful applications and promotion of peaceful nuclear explosions.)

A complete nuclear test ban treaty.

Stop all civilian and military production of plutonium.

The IAEA's "technical assistance" and "technical co-operation" are promotion programmes for the application of radioisotopes and radiation for industrial, medical, agricultural and other purposes in developing countries. One main reason for this policy has been and still is to give a positive image to a technology which from the very beginning has been connected with death and devastation.

Most of the IAEA's promotion has been given to large-scale projects (e.g. food irradiation). These projects are frequently not adapted to the specific needs of developing countries.

To avoid unnecessary applications of nuclear technology in industry, agriculture and medicine, the United Nations should promote the research on, and the development and application of non-nuclear alternatives.

No further nuclear application in industry, agriculture and medicine without proof of requirements and without proof of non-nuclear options!

No application of nuclear technology without appropriate regula-

tions for radiation protection and waste management!

Nuclear power is a hazard to environment and people. Therefore it has to be stopped as soon as possible. Until this aim is reached the IAEA should:

Improve the safety of existing nuclear power plants and other facilities of the fuel cycle!

Improve _____
protection _____
_____ workers, environment and the public!

Develop solutions for the problems nuclear industry has created: especially for the radioactive waste!

Minimize and avoid transports of nuclear material and waste!

To accelerate the phasing out of nuclear power production the United Nations should:

promote the research on, and the development and application of renewable energies, especially in small-scale installations.

take suitable action to cut down the waste of energy, especially in the industrialized countries.

The IAEA's work has to become more transparent:

NGOs have to be allowed to participate in conferences and in the IAEA's missions. Full information has to be provided for the affected people. To finance this work of NGOs an appropriate part of the countries' contribution to the IAEA budget has to be used.

Now, despite the overwhelming evidence of millions of premature deaths from massive global contamination by nuclear radiation, despite the continuing deaths and illnesses from the accidents at Three Mile Island and Chernobyl, despite the still-unsolved problems of disposing of vast and rapidly accumulating nuclear wastes that will remain lethal for thousands of years, despite all this, the IAEA continues to act as a propaganda and promotion agency for the nuclear industry.

We suggest abolition of the IAEA. The work of rigorously monitoring the nuclear fuel cycle—from the mining of uranium to the dismantling and disposal of nuclear weapons and nuclear reactors—could be transferred to an independent United Nations scientific authority with no attachment to the nuclear industry. And the urgent task of developing alternative, non-nuclear, non-polluting, safe and renewable energy sources should be undertaken by a completely new international U.N.

cy (IAEA) is located in Vienna. Arguing with IAEA's policy of promotion of nuclear technology is an important part of AAI's work.

Anti - Atom - International has recently published a study which documents the role played by the International Atomic Energy Agency, which is a UN agency, in spreading the hazards connected with the use of nuclear energy throughout the world. They consider reform of the agency a priority for antinuclear and environmental groups. They feel that efforts to reform organisations such as IAEA can only be successful if political pressure is brought upon the organisation from many people and many countries. It is in this connection that they have issued the following appeal. They want that as a first step, people should write to their own governments.

Anti Atom International
A-1010 Vienna Austria

Protest In Taiwan

Pollowing weeks of intense and occasionally violent debate the Legislature decided on July 9 not to review or freeze last year's initial budget for construction of Taiwan's fourth nuclear plant. The decision will allow the construction bidding process to continue. The Taiwan Power Company (Taipower) is to select the construction contractor by the end of this year.

The July 9 open-ballot vote was the second vote in three weeks of bitterly divided and often chaotic debate both in and outside the legislature. The issue was initially debated and voted upon on June 23 by the Legislature's Budget, Economic, Interior Affairs and Na-

tional Defense Committees. The legitimacy of that vote, which was held in an uproar after hundreds of protesters stormed into the Legislature's meeting hall, was disputed vehemently by legislators of the opposition Democratic Progressive Party (DPP). The opposition forced the ruling party to submit the issue to an open ballot of the full legislature on July 9. The final tally in the voting was 76 to 57 opposed to reviewing last year's passage of the budget. In other words, the budget will stand and the project will continue for at least one more year.

Demonstrators from anti-nuclear groups and the Yen Liao area where the nuclear plant is to be

built had been camped outside the legislature building in downtown Taipei in protest since early June. By June 23, their numbers had swelled to over a thousand. During the afternoon discussions, the Yen Liao protesters stormed through police barricades and broke down the doors of the Legislature Building to get into the meeting hall. Chaos ensued in the packed hall and continued during the voting. A scuffle between two legislators over the voting process ended with both in the hospital. When the legislature reconvened two days later, supporters of the two injured lawmakers clashed outside the hall as legislators inside argued the validity of the previous meeting's vote count and committee process.

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The outcome of the votes reflects the control the ruling party (the Kuomintang, or KMT) still maintains over the legislative process. As the decision approached, the KMT leadership devoted their full efforts to supporting Taipower's plan to build the no. 4 plant. On July 7, President Lee Teng-hui, who also is chairman of the KMT, warned that any KMT legislator who voted in opposition to the fourth nuclear plant would be punished by the party. (Even so, three KMT legislators voted against the project.)

The debate which was raging in the media and society on the need and consequences of building a fourth nuclear plant was rendered irrelevant by the KMT's pressuring of its legislators. The public debate was turned into a purely political issue in which the majority party

held control, and the public's doubts about nuclear power had no impact on the decision.

The focus of anti-nuclear groups turns toward next year, when the budget will again be up for review. If there is no visible improvement in Taipower's safety management, opposition to the fourth nuclear plant project is likely to grow even stronger. Many observers are predicting annual clashes over the budget as long as the project exists. If a contract is signed with a bidder this year, however, blocking the project may be more difficult in the future.

On the positive side, the debate over nuclear power escalated to a level never before seen in Taiwan. Opposition to building another nuclear plant has grown in force with every scam and accident at

the nuclear plants. The media's standpoint has been increasingly skeptical of nuclear power. And had the KMT not exerted strong pressure on its legislators, the opposition would likely have succeeded in freezing the project's budget. There is hope!

The media in Taiwan, responding to the unceasing string of incidents at the nuclear plants, began reporting on nuclear issues with greater frankness and skepticism than ever before. In the legislature itself, the opposition parties formed a solid bloc to force freezing of the budget, and a few legislators of the ruling Kuomintang (KMT) party even dared to risk the wrath of their party by not supporting the fourth nuclear plant project.

Nuclear Report from Taiwan
July/August 1993

STAR WARS: 1983-1993

A \$30 BILLION LESSON

The tragedy was that the Czar could lift a finger, touch a bell and ignite a war without consulting any living person.

Alexander Kinglake 1896 - War in the Crimea

One night in 1983, without warning, without cabinet approval, without a word to the United States Congress or the United Nations, without consultation with the world science community, without notification of any other nation, without even informing the Pentagon or the military chiefs of staff, and without the slightest reflection on the implications, Ronald Reagan off-handedly announced that he wanted to put nuclear bombs in space.

Thus was born Star Wars. SDI Reagan called it. Strategic Defense

Initiative. "Some Dumb Idea" commented Admiral Gene LeRoque of the invaluable Center for Defense Information. Former Defense Secretary, Harold Brown said it was "the most irresponsible act by any president this century".

Here was a proposal that would be horrendously expensive, destabilize all existing military understandings, violate the ABM Treaty, initiate a nuclear arms race in space, jeopardize the entire international civilian space enterprise, create a system that could be destroyed by cheap and easy countermeasures, and, even in the

unlikely possibility that it could ever be even marginally effective, would, to that extent, simply encourage adversaries to take the bombs off the rockets and smuggle them into potential target nations. Carl Sagan wryly suggested bombs might be hidden in "all those bales of marijuana that seem to have no trouble getting past customs." From the beginning the whole idea was impossible, inane, ineffective and counterproductive.

Nevertheless, despite relentless criticism from some of the nation's leading science minds, despite untiring efforts by the Union of Con-

cerned Scientists, and citizen's activist organizations like ISCOS (Institute for Security and Cooperation in Outer Space), Star Ware would, in the next ten years, soak up \$30 billion of taxpayers money to produce nothing but a destructively costly embarrassment. It has now finally been ended by President Clinton.

There are painful and difficult lessons to be learned from the Star Wars blunder — and there is much blame to be shared by many.

Reagan, of course, started the madness when this most intellectually defenseless of presidents was effortlessly bamboozled at dinner one night by that slyest of corrupt scientists, Edward Teller, who went on to profit handsomely from Star Wars contracts and to siphon off billions of tax dollars for his Lawrence Livermore Radiation Laboratories to play with.

But how was Reagan allowed to proceed so far so fast with so preposterous a scheme?

Thousands of scientists who should have known better—indeed, who did know better—nevertheless dived into the apparently bottomless trough of public funds for all manner of crazed schemes—orbiting X-ray Lasers powered by nuclear bombs!—things they knew could not and would not work, but

could eat up literally trillions of dollars in pointless research. Despite the heroic efforts of a minority to halt the project, many scientists and the science community as a whole have lost much respect by this disgraceful display of greed and dishonesty.

The fact that, year after year, with virtually no discussion, Congress meekly caved in and voted for huge allocations for Star Wars* reflects ill on the collective level of intelligence, judgment and integrity of the members of both houses. Including alas, then Senator Al Gore, who unfailingly supported the scheme.

The mainstream media has largely let the outrage of Star Wars slip by with the same sort of lazy, indifferent and shallow reporting they displayed in the other Reagan-Bush scandals.

But sadly, people probably do get the government they deserve. The fact is there was virtually no spontaneous or organized public outcry. It is an unflattering reflection of American citizens. There seems to be truth in the observation by Robert Hughes in his jurrent bestseller, *Culture of Complaint*, that "Reagan educated America down to his level. He left his country a little stupider in 1988 than it had been in 1980."

So what are the lessons?

It seems that there is need for some corrective legislation. It make* no sense that so vast a change in the military policy and weaponry of the world's most powerful nation can be determined by a mere passing whim of a notoriously ignorant and ill informed president. Nor has the threat ended. There is no guarantee that, next year or next century, some unforeseen exigencies of economics, politics or society will not again throw up another president like Reagan.

Work therefore should begin immediately on devising some more orderly legislative procedures by which monumental undertakings like Star Wars can first be held up to public scrutiny and debate—in the USA and in the United Nations—before such dangerous and extravagant fantasies are set in motion to so willfully and pointlessly plunder the public purse again.

But at least, for now, the slow death of Star Wars has begun; thus, as ISOOS President Carol Rosin, has pointed out, depriving the generals of their last, desperate justification to resume nuclear testing.

Letter from Kakrapar

Of all the nuclear power plants in the world, for us in South Gujarat, Kakrapar is the one that gives us the most nightmares. Its proximity overwhelms everything else.

It is not that the plant is very old and suffering from all the various kinds of problems like neutron induced brittleness and bacterial cor-

rosion that beset old reactors like the one at Tarapur. In fact, the reactor at Kakrapar is brand new. It has yet to celebrate its first birthday. Yet on July 31st it had an unplanned shutdown. Another Rs. 50 million down the drain. Or is it Rs. 100 million? Who knows and who cares!

Just a month ago, the Atomic Energy Regulatory Board (AERB) had announced with much fanfare that following the report of the inquiry committee investigating the cause of the devastating fire at Norora Atomic Power Station on March 31, 1993, all the nuclear power plants in the country were to be closed down for inspection.

Quite a few newspapers wrote editorials congratulating the AERB for having come of age and having grown (at long last) a set of teeth. Alas, AERB has been toothless for so long that it has now no idea what teeth are meant for. One would have expected that this sudden unplanned shutdown at Kakrapar would be a fine opportunity for AERB to thoroughly inspect the reactor. Such an inspection is all the more necessary since in the first place the AERB allowed the reactor to start without properly checking if vital safety systems like the Emergency Core Cooling System were functioning as per design intent. But no inspection was undertaken and the reactor was restarted on 6th of August to commemorate Hiroshima Day.

You wouldn't think of it but Hiroshima Day is something 'special' at Kakrapar. On 6th of August in 1946 police fired on a large rally of protesters killing one young boy and injuring another. Ever since, every Hiroshima Day we witness a huge contingent of police drawn from various districts of Gujarat patrolling the villages. Of course, most people prefer to remain indoors, in order to avoid any sort of provocation. Although for the last five years there has been not even a hint of protest, the police have stuck to their vigil. The beginning of June brings monsoon showers and the beginning of August brings police interrogators.

At the time construction of Kakrapar project began some were happy that this project would 'improve' their employment prospects. However, after working for a little while in the plant complex many are beginning to have doubts. There have been persistent reports of mysterious disappearances. One worker in the operations and maintenance section who was working on elevator number 112, became unconscious. There was a rumor that he received 3,000 millirem of radiation dose in half an hour. People tried to revive him,

but they seemed afraid to touch him. Finally he was sent to Bombay. Three months have passed and there is still no news of him.

Coming back to the unplanned shutdown of July 31. The authorities told a correspondent from *Sandeep* (a Gujarati newspaper) that the shutdown had been due to large vibrations in the turbine blades. The bearings had worn out and had become loose they claimed. These had been replaced by a new packing and now all was hunky-dory. Though it is beyond understanding how bearings could have worn out in less than a year.

Some have definitely benefited from Kakrapar at least in monetary terms. The Mandvi Education Society, which runs the Mandvi High School is one such. On 27th of August they received a 'donation' of Rs 200,000. Last year they had received a donation of Rs 500,000. No doubt there will be more donations to worthy causes in the future as well. **Some** uncharitable antinukes have dubbed these donations as 'blood money'. They claim that Mandvi High School which is within 5 km of the atomic power station is jeopardizing the future health of its students. •

Some other schools have decided to play it safe. The school at Vanskui run by the Gram Seva Samaj an organization as-

sociated with Shri Jhinabhai Darji has already shifted premises and relocated outside the 5 km zone. They deserve congratulations for their sense of responsibility towards their students. Other schools are also considering shifting to newer distant sites. They ought to be helped by the government in this eminently sensible move. Similarly the government should help other residents in the vicinity of Kakrapar to relocate.

Surendra Gadekar

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