



# ANUMUKTI

A JOURNAL DEVOTED TO NON-NUCLEAR INDIA

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The Prime Minister has dedicated Narora to the nation. The nation ought to feel pleased. But, in actual fact, it is the nation which has been sacrificed for Narora and the nuclear ambitions it represents of the 'regional superpower' status seekers. Nothing has been allowed to stand in the way. Not the pollution of the Ganga; not the unfavourable seismic conditions; not the large population density; not the defects in materials and design and not even the ever present "teething troubles". Electoral considerations have ridden roughshod over all.

Just two weeks before the Prime Minister formally inflicted Narora on us, the nuclear plant was closed down on the orders of the Atomic Energy Regulatory Board (AERB) for safety violations. All that the chairman of the Nuclear Power Corporation - the body which is responsible for the running of the plant - said in explanation was that the problems of Narora were "just teething troubles". Normally when a forty year old complains about teeth problems, you think that the poor fellow is about to loose his teeth. But modern Science and Technology is a wonderful thing. It has produced a forty year old infant. The Indian nuclear programme is forty this year. Oh, what glorious four decades of FREEDOM!

It is a pity that the Atomic Energy Regulatory Board is such a toothless body. When I first read of their order closing down Narora, I cheered. I was too naive. I ought to have remembered that the AERB has never complained of "teething troubles!"

Unfortunately nuclear fun and games of the mighty have tragic consequences for the weak innocent bystanders. Given a meaningful choice most people would choose to live and work far away from nuclear installations. In this issue we carry the story of Judith Jurji - a victim of America's nuclear playboys. She describes the agony of a lifetime of sickness and of not knowing why. But, more than that she tells a story of a betrayal of trust by her government.

We also carry in this issue, a newsreport which says marine algae near Tarapur have been found to have long lasting radioactive iodine seven hundred and forty times the normal level in them. In our own way we too are well down the path of creating "National Sacrifice Areas."

Ours has been in the past a caring society. Sewa has been a Dharma. The glitter of the '21st Century' and the rush to "catch-up with the West" has blinded some amongst us. It is time that they be forced to open up their eyes.

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## Antinukes Meet at Harsud

A meeting of antinuclear activists was held in Harsud, MP on 28th September, 1989. Persons from Andhra Pradesh, Delhi, Gujarat, Karnataka and UP attended. It was a useful meeting for Anumukti, since how to improve Anumukti was the main topic on the agenda.

There were many suggestions. Some felt that the English was too difficult and the matter was too technical for the uninitiated to understand. It had failed to interest college students. The Delhi group suggested that it should contain some cartoons and some space should be reserved for basics about nuclear energy which ought to be repeated every other issue.

The Karnataka group suggested that there ought to be many small newsitems somewhat like the WISE format. But the Anumukti team felt that there just were not enough items of news from India. If activists could send local news then they were certainly willing to give space for it.

Everyone agreed to a suggestion that activists should send in ten names and addresses of friends to whom a complimentary copy of Anumukti would be sent. The activist should also undertake the responsibility of follow-up.

A difficulty in reaching out to people was felt. Activists from Mysore told of how they had contacted all schools in Mysore and formed 60 environmental clubs in a single day. They had gone to the school to plant trees. They talked about trees and the environment. And then they talked about energy needs and then naturally about nuclear energy. The Vedchhi group also talked about their experiences in conducting slide shows in schools as part of the Hiroshima day functions.

It was reported that the antinuclear groups in Andhra Pradesh intend to sponsor an antinuclear candidate during the forthcoming elections.

The Medico Friends' Circle (MFC) - a group of doctors, paramedics and activists interested in public health - plans to hold its annual convention during the last week of January '90, somewhere in the south. This year as their theme they have chosen: "Radiation and Health". They plan to examine in detail questions like the health effects of the nuclear fuel cycle; the health implications of radiation technologies such as food irradiation and nuclear medicine; the criteria determining the way in which standards such as 'safe' radiation levels are set and so on. The next Anumukti meet will be held along with the MFC conference. Details regarding this in our December issue.

## Last Rites for the First Commercial Reactor

Last April the Shippingport Atomic Power Station was lowered into a 40-foot deep grave on the Hanford nuclear reservation. It was the end of an 8,100 mile odyssey for the 1,000-ton reactor vessel, which had been barged from Shippingport, Pennsylvania, down the Ohio and Mississippi rivers, through the Panama Canal, up the Pacific coast and into the Columbia river for the final leg of its journey to Hanford.

At the mouth of the Columbia near Portland, Oregon, and most of the way up the river, members of the Northwest Radiation Alert Network staged protests. Some splattered the reactor with lime green paint, saying they don't want the Columbia to become a "nuclear highway".

Shippingport cost \$125 million to build and \$98 million to decommission. Sixty-seven other reactors will be candidates for decommissioning by 2010. The Shippingport experiment has been criticized by groups who say that moving a small reactor has little relevance to the problems involved in decommissioning large reactors. In their view, here was an opportunity that has been squandered.

Bulletin of Atomic Scientists, October 1989

# The Price of What is Lost

My name is Judith Jurji. My family moved to a small town of Pasco near the Hanford Reservation in 1949. I was four years old. At the time, my father was a pipefitter and worked at Hanford. His two younger brothers and their families moved soon thereafter and also worked at Hanford.

At the time I am presenting this (May 1989) six members of my family have been positively diagnosed with damaged, non-functioning thyroid glands and have suffered the consequences of the medical condition called hypothyroidism. The family members are myself, my mother, my younger sister, my father's two younger brothers and my cousin. I am sad to report that one of these uncles recently died. His long undiagnosed hypothyroidism had led to severe kidney and heart problems. The remaining uncle is currently in very poor health. There are other family members who are just now nearing forty when thyroid problems are often manifested. We are watching them closely. I must also point out that there is absolutely no history of thyroid problems on either side of my family and my father's other brothers and sisters and their families, who have never lived in Washington state, are in good health.

We have no doubt in our minds that our health problems were caused by the secret and in some cases, deliberate, massive amounts of radioactive iodine-131 released from the Hanford nuclear facility during the 1940s and 1950s. Our close proximity to the Hanford plant and the fact that my family always had a large vegetable garden and drank the local milk, put us at high risk. And now the passage of time and our degenerating health has revealed that we are, indeed, among the ranks of unsuspecting victims of America's nuclear industry. None of us are comfortable with the label of victim and I for one only feel less so by speaking out as I am doing today. Yet I can tell you that the rage I feel is unfathomable.

I have often thought how much simpler it would be if at the time of exposure, we had all grown an extra leg and turned fluorescent green - the contamination that we received would be obvious and unquestioned. But in the real world, the human body is damaged in ways that are familiar - cancer, reproductive problems, autoimmune diseases and so forth. So now, some forty years later, those of us who were children then, are trying to assess the damages. We are put in the undignified position of trying not to look like hysterical hypochondriacs while we try to sort out our health problems and their probable link to radiation we received.

During the war, my father had served in Germany and France. He comes from an old American family who were among the original colonists of Virginia and later were the first settlers in Tennessee. His father had fought in World War I, his great grand father in the Civil War, his great-great grand father in the War of 1812, and his great-great-great grandfather in the Revolutionary War. Now my father must face the soul chilling reality that his own country's government knowingly contaminated our family and countless others, and dismisses it all as a case of "ends justifying means" - that in the time of war, and of cold war, fears about "national security" justified these callous actions. To say that we are all bitter and disgusted with this cowardly rationalization is an understatement. We feel deeply ashamed of our government and the cold amoral technocrats who felt it was necessary to radiate families to "protect" them. We also feel that people should be made aware that when the government talks about "national security" it is land and property, but evidently not people that are of such urgent concern.

It has been less than two years since I found out, quite by a remarkable chance about the secret releases of

radioactive iodine, which occurred between the years 1944 and 1956. I was at that time (1967) a part time college teacher, teaching a large "Introduction to Art" class at a community college near Seattle. Right from the beginning of the class I found myself noticing one student in particular - a pale dark haired woman with a dreadful slash of a scar near the base of her neck. She had a deeply attentive but melancholic face and a compelling dignity, despite her tired and haunted look. Her skin seemed ashen and grey and she spoke in a weak voice that was barely audible.

Shortly after the quarter began she came to my office to discuss the class term paper she was planning to write. It was then that I found that she was a cancer patient having recently had her cancerous thyroid removed. She was at that time undergoing radiation therapy to prevent the cancer spreading. At my request, she told me about her own case. As her story unfolded, I found that my heart began to beat faster and faster. Then in one astounding moment all the odd fragments suddenly snapped together and I began to see the outline of truth. I too had gone to Captain Grey Elementary School! My family had also lived close to Hanford during the years of the "secret releases!" I too had numerous and chronic mysterious health problems! I was astonished to hear her tell of the documents which had just been "declassified" the year before (Feb 1966). I had heard nothing about them.

As she left my office she advised me to have a thorough thyroid examination and she explained to me what to ask for. I immediately made an appointment. My doctor checked my thyroid and not feeling anything out of the ordinary was inclined to stop there. I insisted that I wanted the relevant blood test and an ultra-sound scan. I explained to him that I strongly suspected that I had a damaged thyroid due to radiation that I had received as a child. He was dubious but agreed to the tests. Within two days we knew. Yes, I was hypothyroid. My thyroid was covered with nodules and was not functioning. I was immediately put on

levothyroxine, a synthetic hormone I was told I would take daily for the rest of my life.

Until I learned about my own condition, I had no idea how essential this small two lobed gland is to the entire metabolic system. In retrospect, I know, that I was affected even in childhood. I was abnormally fatigued and weak even then. I remember being taken to doctors several times who checked me for anaemia and tuberculosis. No one thought to check the thyroid.

Like many children who are unhealthy, I adapted to my physical state. Fortunately, I was mentally energetic and found books and art a good substitute for all the physical things I could not do. It was though, a childhood filled with nausea, headaches and fatigue, and I can only remember it with sadness.

By the time I was in college I continued to be amazed how lacking in energy I was compared to just about everyone I knew. Also at the time - when I was about twenty - I suddenly began losing pigmentation in my skin. This led me to seek several dermatologists who at the time could only say that it was "vitiligo," a kind of mutation of unknown cause which was not life threatening. At that time in the 1960s, they did not know that it had to do with a damaged and malfunctioning autoimmune system and is occasionally seen as a part of a syndrome with hypothyroidism.

I did well in school and my life in the 1970s was marred primarily by the omnipresent fatigue, and by my inability to get pregnant after years of marriage. Also by this time my skin lost all its pigmentation and I had to avoid the sun almost completely. I had to live like a small nocturnal animal always scurrying from one patch of shade to another.

Toward the end of 1970s my general condition began to worsen. I had finished my master's degree in art history and was admitted into the Ph.D. programme at the University of Washington. But my fatigue finally conquered me. In utter exhaustion I suddenly quit. I went home and for almost one entire year, did nothing but sit at my bedroom

window and gaze, without boredom, at the birds and the clouds and the changing colours of the leaves.

Somewhat restored by this self-imposed rest cure, I felt well enough to begin again - but not at the university. I knew that my condition and energy was so variable that I would have to do something at which I could make my own hours so that on those frequent days I felt too tired, I could "lay low." I took up architectural painting. I found that I had an unexpected talent for the decorative. I began to do borders, murals, floors, ceilings, screens-decorative work in restaurants, theatres, businesses and private homes. I acquired a partner to help me. The work was satisfying but very taxing physically, though I could hire helpers.

After several hectic but successful years of this, I realized once again that I just did not have the energy that a full scale serious business required. I cut back gradually on the commercial work and took mainly small residential projects. About this time, around 1930, my health took a dramatic turn for the worse.

I found that I was always sleepy, cold, tired and I began to get a kind of unhealthy puffiness in the face. My hair had become thinner and coarser. I started to gain weight and in a startling short time went from a dress size seven to a fourteen. I found it too tiring to hold myself erect. By 1935, I believe I was fully hypothyroid.

I had shortness of breath and a chronic half awake feeling. Walking across a room felt strange, like I was walking strenuously up-hill. I had long given up trying to get pregnant. My stress level began to get higher and higher as I felt I could do less and less and I could not understand what was happening to me. Always haunted by bouts of depression, it now became a chronic condition. I was now about forty - was it all just aging? I went to my doctor, completely certain that something was the matter with my heart. No, he said the heart was okay. Must be the stress of the new job.

I was increasingly having memory

loss. It was terrifying. I had always had a good memory, and although in the beginning my husband and I felt that it might be just normal to "aging," it soon became clear that it was worsening almost daily. Secretly felt I was suffering from Alzheimer's disease.

The fact was, that during this awful time, I was just simply not getting enough oxygen to my brain and in addition my pituitary gland was working feverishly trying to flog the radiation-damaged thyroid gland to get back to work! This is how it is with hypothyroidism - lacking the hormone which sets the complex metabolic system going, the whole interconnected metabolic system goes haywire. Ovulation and other areas of the reproductive system are affected. My mother and cousin both had miscarriages - I am infertile. My skin cells could no longer make melanin. Fluid collected in my tissues causing the incredible hypertension I experienced as well as the tell-tale puffiness of the face. A slowed down metabolism caused me to quickly gain weight. The sweat glands stopped working also - causing fluid retention and causing me to dangerously overheat during physical activity. I also had a heat stroke. I never felt rested even after twelve hours of sleep. By 1936 I had lost my once-taken-for-granted ability to dream, and to remember dreams in vivid detail. In short, I felt I was aging at an incredibly accelerated rate and that I would soon be dead.

I now know that if this condition had not been caught, and I feel it was caught at the eleventh hour, it would have lead to the severely damaged kidney and cardio-vascular systems that appeared in my uncles in late middle age. Today I take a small blue pill daily which is medical science's attempt to duplicate at least in part, the vital missing hormone which the thyroid can no longer produce. I am relieved to report that after a year and a half on this medication, my energy level is vastly improved and my memory and breathing almost returned to normal within weeks after first taking it. In fact I have the rather pleasant sensation of

actually growing younger, which I must add does not compensate much for the horrible years I felt I was old before my time. I still live in fear for what the future holds for me in terms of my health and I shudder every day to think about the many former residents of Hanford area, now scattered over this country, who might even now be suffering from hypothyroidism or thyroid cancer, and who do not know what is wrong with them or why. As shocked I was to learn of the releases, the relief of finally knowing is beyond measure. Once I was a forty year old adult who did not know that Hanford produced anything but electricity. Now, only three years later, I have drawn back the cloak of history to find to my utter astonishment that I have been all the while enfolded tightly in it. The bomb that was detonated in Nagasaki just weeks after my birth is still destroying me and my family.

I have been asked to estimate for me the cost of this radioactive contamination. If pressed, I could calculate the past, present and projected future medical costs. I could also add up the estimated lost income my ill health has caused me. But how do you put a price on the children I never had? Or the life of a dear uncle who was like a second father to me? Or the childhood that was ruined? Or the years of suffering? Or the loss of faith in my government? Or the fear of further serious illness which continues to haunt me?

I have contemplated the history of these events with great care, and have concluded that the obvious humane warning or confiscation of milk and vegetables was not forthcoming simply for the reason that we were sacrificed for the sake of technological experiments. We were not even as important as laboratory guinea-pigs. Guinea pigs are

studied after the experiment. We were just ignored. As for those other times, when it was an accident, not an experiment, telling would have created a mass stampede out of the area, depriving Hanford of its precious lower-level workers. I know that even as job desperate my father was at the time, he would have led his tribe out of this Land of Deadly Milk and Radioactive Honey. Brainwashed as the Hanford workers were, that it was necessary to bomb Japanese civilians and "save lives" by bringing the "war to an end," or that we needed to "catch up with the Russians," they all were nevertheless made to believe that this secret endeavour was absolutely safe. It was however, not, for their children. They might as well have been workers at a factory bottling poisoned milk for babies.

Recently I have been encouraged that our government and media seem to be slowly becoming aware of the disastrous results of the decades of so called "bad management" in the nuclear facilities of America. Everyone acknowledges that money by the mega-ton is needed now for the task of "clean up." Yet hardly a word has been uttered about the human cost. It is as if there is some kind of unconscious or covert knowledge that this is one bit of "hazardous waste" that will in time conveniently disappear.

In any case, all of us whether we like it or not must join the ranks of our military veteran ancestors. For history will know us as the ones who were wounded, sometimes mortally, in the sad and useless Cold War of 1945-1956.

**Judith Jurji**

Excerpt from a talk given to the Hanford Downwinder Gathering, May 20th, 1990 at Spokane, Washington

Courtesy: The Hanford Journal

## "We have made history"

Dr. Kusuma, a medical doctor, works in 'Snehakunj' in Honavar in the North Canara district of Karnataka. Kaiga, the site of an upcoming nuclear power plant and also the site of numerous people's protests is also located in this district. Dr. Kusuma has been described by others in the movement as a real "live wire". The interview was conducted by Dr. Ums an activist of the Kakrapar nuclear protest.

Uma:- Could you tell us about progress of the antinuclear protest in Kaiga?

Kusuma:- There has been a continuous relay hunger strike in front of the office of the district collector at Sirsi since the 5th of June, the World Environment Day. It is a unique protest against Kaiga nuclear plant. Every day, ten to twenty people sit down to fast. On 12th of September, the 100th day of the fast, about three thousand people assembled in Sirsi and everyone fasted together. History is being made there.

Uma:- What else has happened at Kaiga?

Kusuma:- On 30th of January, 1989, people marched towards the plant site from different directions in groups. There were police patrols everywhere. The administration had blockaded roads leading to Kaiga. Buses were stopped 10 kms from the site. Yet some Satyagrahees managed to reach the gate of the plant where they were stopped by the police. We women reached the site from the unguarded forest side. All of us jumped into the foundation and said that we would not let the foundation to be dug. The workers working at the site ran away. In spite of their "Pucca Bardobast" the police could not even find the way we had reached the site. Eventually we were all arrested.

Uma:- Did only women participate in this protest.

Kusuma:- No, no! There were both men and women in the movement. The administration did a strange thing. We were arrested for breaking prohibitory orders under Section 144, but the local fishermen were arrested under the Terrorism And Disturbed Areas Act. By doing this the administration wanted to frighten the local people since they felt that the activists from the cities would quietly go away after their release in the evening. But the effect was just the opposite of what they had anticipated. Everyone protested the non-bailable arrest of local people. We protested in front of the magistrate's office for three days. The local people, instead of being frightened were emboldened. Finally, the administration

gave up and released everyone.

Uma:- What effect did this action have on the state government?

Kusuma:- I believe that the Karnataka government is very shaky on the Kaiga issue after our Satyagraha. If we continue in this manner, then surely they will have to stop Kaiga.

Uma:- What next in your protest?

Kusuma:- From 2nd of November, we will start a "Rasta Roko - Rasta Todo" agitation.

Uma:- Won't "Rasta Todo" mean a violent form of protest?

Kusuma:- I have complete faith in non-violence. But I also believe that if we are not able to halt the construction of the plant, it will affect the lives and health of thousands of people. That violence will be far more than the one caused by digging roads. The ill effects of nuclear power are going to affect many generations to come. The plant has to be stopped, come what may.

Uma:- In Kakrapar too, people understand the bad effects of the nuclear-plant in their neighbourhood, but they have become despondent due to continuing police atrocities and the fact that despite their efforts, the plant is nearing completion. Any suggestions?

Kusuma:- Please come and join us on 2nd November with friends from Kakrapar. When they see us protesting they too would want to fight.

Uma:- What steps do you suggest to stop nuclear power at the national level?

Kusuma:- I envisage action at three levels.

1. people's education regarding nuclear power through posters, exhibitions, drama, street plays, journals like Anumukti and publishing of material in local languages.

2. Recourse to the legal system: We have filed a writ petition in the Supreme Court against Kaiga. The whole country should support it. If we win the case, it would be easy to stop other nuclear plants.

3. To continue and intensify local protest movements at the sites of nuclear power plants.

# In Any Case ...

## Sensitive Measurements and Insensitive Scientists

Recent findings of a Bhabha Atomic Research Centre (BARC) team of scientists that marine algae near the Tarapur Atomic Power Station (TAPS) showed an unusually high concentration of radioactive iodine have created a flutter among top nuclear scientists:

The findings, the result of a survey carried out by researchers G.R.Doshi and S.N.Doshi from BARC's health physics division, were published in the recent issue of the Indian Journal for Marine Sciences. They found iodine-129 (a radioactive isotope of iodine) in marine algae near Tarapur at 740 times the normal concentration.

Iodine-129, which is one of the wastes generated in the reprocessing plant and the waste immobilisation units at Tarapur, has a very long half life. It would constitute a potential health hazard if it became part of the food chain.

Top scientists at the Atomic Energy Regulatory Board (AERB), which is the regulatory body for all safety aspects of nuclear energy in the country, said the high concentrations indicate an obvious lapse of environmental safety precautions. They said that marine algae had been selected for the survey because they are regarded as indicator organisms which have a tendency to accumulate iodine. "If the concentrations of iodine 129 were so immensely high in these organisms, one shudders to think of those organisms where the concentrations of radioactive wastes cannot be so easily traced," these scientists said while requesting anonymity.

Citing the BARC scientists' report which said that "variations of this magnitude of iodine-129 in the environment cannot be attributed to increased iodine uptake, but only to the releases from the reprocessing plant," the AERB scientists said the study clearly indicated the need for increased monitoring and surveillance of the

discharges from the reprocessing plant.

"Unless a close watch is maintained and an exhaustive study carried out, one will never know the amount of environmental buildup of the radionuclide." They said that there are two types of indicator organisms - seaweed and algae among the plants and bivalve shells among the animals. A study of bivalve shells is yet to be made, they added.

Meanwhile, the head of BARC health physics division, Dr.K.C.Pillai told this reporter that despite the findings of his two juniors, there was no cause for worry. "The reason why such an unusually high concentration was reported was because the technique used to measure these concentrations was very sensitive. In fact the entire objective of the study was to show the efficiency of this technique, known as neutron activation analysis," he said.

"The reason for the high concentration is that marine algae have a tendency to accumulate iodine. Since the samples were taken from near TAPS, these algae had a greater concentration radioactive lides. It is not possible to say how much time it took to acquire this concentration, since iodine accumulation is an on-going process. In any case the concentrations reported constitute no health hazard as they are still very small, though higher than normal. Despite these concentrations, the food chain will not be affected."

"In any case," Dr.Pillai said, "radioactivity in sea water is four times that found on land. Concentrations of radionuclides like potassium-40 are to the tune of 380 milligrammes per litre. Marine organisms are hence used to living in an environment that is more radioactive than land, and added concentrations of iodine-129 would not affect the status quo," he said.

Source: Raju Kane

The Independent 30.9.1989

## Editor's Note:

Reprocessing plants are a bigger menace to public health and environmental safety than even nuclear reactors. This is so because a great deal of the radioactive poisons produced during reactor operations are trapped within the confines of the fuel rods. During reprocessing, where the rods are mechanically broken and chemically treated, these radioactive fission products are released from the rods and can contaminate the environment. Therefore, reprocessing plants need to exercise greater caution during operations. The preceding newsreport is indeed a horror story. In an ecologically aware society, it would have led, at the very minimum, to the immediate suspension of operations, a thorough investigation into the causes of the pollution and punitive action against those held responsible.

Iodine-129 has a half-life of just sixteen million years and is therefore virtually indestructible. Hence, our responsibility to the future inhabitants of this planet is all the more demanding with regard to this isotope. Thus, levels in algae 740 times the normal show a shocking, criminal disregard for our common future.

But, there are other points not highlighted in the newsstory. Iodine-129 is just one of the hundreds of radionuclides produced in the nuclear energy generation process. Leave aside other radionuclides, the iodines alone come in half a dozen different radioactive isotopes. Most of the other isotopes of iodine have a short half-life (ranging from hours to 8 days), but they, especially iodine-131 are produced in much larger quantities. Since all radio-isotopes are chemically identical, there is no way that a system that allowed the dispersal of iodine-129 could have prevented the escape of iodine-131 as well. Radioactive iodine tends to accumulate in the thyroid and causes cancer of the thyroid. (See Judith Jurji's history on page 3 of this issue)

Accumulation of radio-iodine in the

thyroid causes greater harm in young children. This is because their thyroids are smaller and hence the dose per gramme of the organ is consequently greater and secondly because the cells in children are dividing far more rapidly and hence damages to cellular material caused by radiation are more likely to be inherited by daughter cells. For all these reasons it is imperative that a health survey especially of children around Tarapur be conducted at once so that remedial action can be initiated without delay.

The story also illustrates other facets of the Indian nuclear situation. The attitude of Dr. Pillai seems typical of many other nucleocrats all over the world. Their first priority seems to be the preservation of the nuclear enterprise rather than the preservation of the species. Therefore, the primary objective of measuring levels of radioactivity in flora and fauna is no longer that the information so obtained may be of use to populations at risk, but is merely to demonstrate the "efficiency" of some technique. While defending nuclear technology they get so carried away that one begins to wonder what kind of 'scientists' are these who think that the sensitivity of a technique results in large values for the measurements.

The other point this story illustrates is of greater importance. The Atomic Energy Regulatory Board was constituted as a watchdog authority whose purpose is to control the nuclear industry. The very fact that its scientists need to hide behind the cloak of anonymity while talking to reporters on a matter of as serious public concern as the above, is a sad commentary on the state of regulation in India. What we need today on part of these watchdogs is not timid barking (though even that is welcome compared to apathetic silence) but rather a willingness to bite. Unfortunately, to bite one needs teeth. But that, brings us back to teething troubles.

# The Military -- Civilian Nuclear Link

Nuclear energy is well and truly terminally sick. But tell that to a nucleocrat in India and he will throw the French at you. To be like the French is what the Indian nuclear mandarins strive for and dream about. Everything about the French is attractive to those who control our nuclear destiny. They love the close links between the military atom and the civilian atom. They also greatly appreciate and want to duplicate the assembly line techniques of reactor construction. But, most of all they absolutely adore and share the total contempt for public opinion which has been the hallmark of the French nuclear programme.

The book by Mary Davis is welcome because true to its subtitle it is a guide to the French nuclear industry. In most countries the links between the military and the civilian branches of the atom are extremely close. But to the French goes the credit of forging them so close that hardly any distinction remains. The book examines these links in great detail. Thus one can get information regarding military agencies which work with civilian officials, the facilities that have dual use or even about the probable civilian sources of plutonium which go into the making of the French nuclear bombs. As a source book, this study is of immense value to anyone who wishes to research into the "grand success" of the French nuclear industry or into the military-civilian links of other countries who wish to emulate the French. Of special value are the comprehensive lists of addresses from where information regarding different aspects of the French programme may be obtained. The book has been published in collaboration with the Paris chapter of the World Information Service on Energy (WISE) and can be obtained from there.

Mary D Davis

The Military Civilian Nuclear Link - A Guide to the French Nuclear Industry Westview Press London (1983)

## Extract

The relationship between the two sides of the atom is relevant to the key nuclear issues of the eighties: safety, liability for accidents, waste management, sources of weapon's plutonium, use of plutonium produced in reprocessing plants and the effects on the military of a phase-out of nuclear power. The French nuclear industry is a microcosm of the military and civilian nuclear industry worldwide. France operates about fifty electricity generating reactors of three basic types and carries out all the phases of the fuel cycle. It has developed and produced nuclear weapons to equip land-, air and sea-based strategic and tactical forces. Because the French nuclear programme is vast in proportion to the nation's size and resources, the advantages and disadvantages of reliance on the atom reveal themselves in France in a more extreme form than elsewhere.

The French nuclear programme satisfies, in appearance at least, two deeply rooted desires of the people: the desire to be independent in energy resources and the desire to be strong militarily. The fact that a single programme meets both these needs, has been a cause for thanks rather than for concern. The vast majority of the French people have been willing to leave the details of the programme to a small band of technocrats. "It is significant that the French nuclear programme has been rarely discussed in Parliament."

Nevertheless there are serious drawbacks to the exploitation of the atom's double character, including the fact that the entire industry cloaks itself in secrecy to prevent the escape of information of military significance. The public does not have the information it needs to assess the industry from the point of view of economics, safety or health. After the Chernobyl accident, the official agency SCPRI, gave out as little information on the fallout as

possible; by trying to prevent the public from worrying about the safety of nuclear reactors, it was protecting the military as well as the civilian programme.

A second disadvantage of the link is the need to afford military protection to ostensibly civilian facilities. Civilian reactors are scheduled to start using fuel containing plutonium as well as uranium oxide (mixed oxide fuel or MOX). Because of the attractiveness of the plutonium to terrorists, the new fuel will have to be heavily guarded during fabrication and transportation as well as at reactor sites. Increases in security are likely to entail infringements in civil liberties. Critics say the plutonium fuel is going into use to provide a rationale for the continued reprocessing of radioactive fuel. Reprocessing is a necessary step in obtaining fuel for weapons.

Another difficulty with the link is that it helps foster a nuclear programme that is out of balance with a nation's other priorities. Electricite' de France generates an impressive proportion of its electricity in nuclear reactors; in doing so it has amassed a crushing debt, yet by 1990, France will have at least 14,000 Megawatts more electricity generating capacity than is needed. Furthermore, the lack of diversity of energy sources means that the shutdown of all reactors in an emergency, such as a nuclear accident, could cause severe hardship.

A related disadvantage is that the link makes it difficult to consider the effectiveness of the nation's energy programme on its own merits. During the Alternative Energy Conference at Cannes in 1986, researchers presented a set of four energy scenarios for France. The most drastic amongst these demonstrates that within seven to eight years after a decision to abandon nuclear power, the nation can shut down all its nuclear reactors without causing an energy shortage. Cost of a phase-out as far as centralized energy production is

concerned, would be 80 billion francs, far less than the 267 billion it would cost to continue to build one reactor a year. However, the phasing out of the civilian reactors would affect the economics of producing enriched uranium for the military. The government cannot shutdown the nation's nuclear power plants and fuel facilities without making decisions about its weapons programme. Furthermore, pressure from the public to reduce either the nuclear energy programme or the nuclear arms programme would elicit fierce opposition from both the civilian and the military sides of the industry.

An end to the civilian programme in France can now be envisaged as a possibility, though a remote one. The accident at Chernobyl and, in particular, the reluctance of the French officials to tell the facts about the radioactive fallout have raised questions in the mind of the public about the wisdom of their "all nuclear" energy programme. The press, throwing a spotlight on the industry, has pointed out that its centralized decision-making involves conflicts of interest. By publicizing for the first time in 1986 a near-accident that had taken place in 1984, journalists underlined the fact that the French people know little about their nuclear industry. The questions, "Can Chernobyl happen here?" and "When will the French Chernobyl occur?" have troubled the French. An announcement in April 1987 that the Superphenix was leaking sodium was not taken as casually by the press or the public as it would have in 1985, nor was the fact that the announcement came four weeks after the leak had been found.

The celebrated "French Nuclear Consensus" is, in fact, showing signs of strain. It remains to be seen whether fear of the civilian programme will grow enough to bring about more substantive changes in the industry. A debate in parliament on the wisdom of relying on nuclear defense as well as on a national energy policy is long overdue.

# Impressions of Harsud

During the last few years there have been spontaneous expressions of people's power against destructive 'development' in many parts of the country. In the East in Orissa - missile testing range at Baliapal and the BALCO bauxite mine at Gandhamardhan in the South - the atomic power plants at Kaiga and Koodankulam and the polyester plant at Harihar; in the North - the deforestation of the Himalayas and the Tehri dam; in the West - the proposed dams on the Narmada and the atomic power plant at Kakrapar - all these are just a few names of places where gigantic, demonic forces have been worshiped in the name of greatness but they also represent battlefields where life activists have confronted the merchants of death and where a struggle between forces of life and forces of death is going on.

The "Sankalp Mela" (dedication festival) at Harsud in Madhya Pradesh on the 28th of September was an attempt to unite all pro-life forces. On the one hand, it was important because thousands attended. On the other, it was important because leaders of mass-movements in different parts of the country, came together. Thus, it had a two-in-one character. Both as a convention of activists and as a 'happening' - where thousands of Adivasi women and men walked miles with children on their backs - it was a success. The presence of the nearly 80 year old, frail in body but youthful in spirit Baba Amte was important. But equally important was the presence of the 8 year old girl who boldly vowed to bring to a halt this mad race towards destruction. The influence of the gathering was due not only to the excellence of the thoughts expressed or the forceful speeches given or the well sung folk songs and the vigorously performed folk dances; it was as much due to the fact that this great diversity was united in one scream. In this fair there were neither swings nor merry-go-rounds nor shops. Loudspeakers

were not screaming the latest lottery numbers and yet it was a 'mela'. Collective existence by itself gave it the life of a mela.

People had started collecting from the night of the 27th itself. They came walking and on trucks. There was a motorcycle rally. All the buses and trains were full.

The press conference with representatives of different active protest groups arranged on the morning of the 28th was a disappointment. This was because there was neither a systematic introduction of the different groups nor were probing questions asked by the journalists. A good opportunity was thus lost. However, this lacunae was filled to some extent by activists in the evening after the main programme by arranging meetings amongst themselves.

The main convention had over forty speakers. The arrangement was such that after the preliminary formalities were over, the speeches of workers from different parts of the country were intermixed with those of the invited speakers. These included Baba Amte, Sunderlal Bahuguna, Shabana Azmi, Dr. Shivram Karanth, Thakurdas Bang and Swami Agnivesh. Since Harsud is slated for drowning in the waters of the Narmada Sagar Dam, very naturally there was a preponderance of voices against big dams. Also natural was the fact that in front of an audience of thousands the speeches emphasised emotional appeal rather than intellectual depth. But all the speeches had a common theme that our country is being destroyed due to the wrong conception of development. It is true that dams can be indicted on many more grounds than just people being displaced and jungles being lost. It is also true that the resolve that we would not allow the dam to be built was not followed by concrete suggestions as to how to implement this resolve. But then this was a mela, not a seminar or a conference. Of greatest importance was the atmosphere.

Baba Apte conducted the oath taking ceremony. Everyone assembled vowed: not to let Harsud drown. Later there was a rally in which people encircled Harsud town and held hands as a symbol of their resolve. Mud brought by people from all parts of India was put in the foundation of a memorial designed by Indore's art-guru Chinchalkar. Swami Agnivesh brought a handful of mud from Indonesia as a gesture of solidarity from the people protesting the building of a big dam in that country.

There were many reasons for the success of the meet. The presence of thousands of Adivasis was one. The dedication of activists was another. But the primary reason was the organising skills, hard work and the simple unostentatious leadership displayed by Medha Patkar. The struggle which is presently raging for giving the right direction to development expects a lot from such cool-headed personalities in the future.

Narayan Desai

## Baliapal Protest

A campaign has been launched to support and create public opinion for the demands raised by the people of Baliapal and Bhogarai.

Baliapal and Bhogarai are two blocks in Orissa's Balasore district, which has seen the growth of a peaceful non-violent struggle against the location of the National Test Range (NTR), India's first missile test base, in this area. This project intends to acquire, in a revised scheme, fifty five villages, covering an area of a hundred and two square kilometers and affecting, according to the government, more than six and a half thousand families. However, according to the Khepanastra Ghati Pratirodh Samiti (KGPS), which is spearheading the struggle, nearly one lakh people will be displaced, if fisherpeople and migrant labourers, now settled, are also accounted for.

In a state where agricultural productivity of its main crop, rice, is decreasing and where industrial production and employment is low, Baliapal is an oasis of innovative indigenous development. It cultivates five cash crops: rice, groundnut, cashewnut, coconut and betel leaf (Paan). The last three are being cultivated on homestead land, giving any opportunity to agricultural labourers, artisans and fisherpeople, to initiate cultivation and earn additional income. Profits from these activities are high as Baliapal holds the monopoly in the production of

Banarasi Patta. In addition, fishing also has become commercialised. From Paan alone the area earns an estimated income ranging from 29 to 56 crores.

This agitation, launched four years ago, is one of the most interesting mass mobilizations that have emerged in the political landscape of contemporary India. Not only has it been able to mobilize every individual, irrespective of class, caste, gender, age and political affiliations, but it has also been able to use the strategy of non-violent satyagraha to question the state's intention and demand that the people be directly consulted and their opinion sought before a decision of such magnitude is taken. Barricades have been erected on all approach roads into the area. The entrance of the government has been stopped by forming human blocks, consisting mainly of women and children. As a result, from March 1986 onwards, no government officials other than those associated with the departments of education and health have been allowed entry. Law and order is being managed by the KGPS. Crime has registered a dramatic decrease.

The Baliapal-Bhogarai struggle has raised some fundamental questions. First, it highlights the problems of democratic functioning of our political institutions. Should not the displaced persons be consulted directly and their wishes taken into account before a decision of such magnitude is taken?

Secondly, what is the criteria for selecting a site for a large scale project, like the NTR? Should these be restricted merely to the technical dimensions or should they also include the social and economic dimensions? Should such a naturally rich area which not only provides more than adequate livelihood for its people but also generates income for the state of Orissa, steeped as it is in poverty be taken over for such a project?

In this context, it is possible to raise three further issues for discussion and debate. The first, relates to the history of development projects in Orissa. Much of the development that has taken place in Orissa has been through large scale projects, that have exploited its natural endowments. For example, dams have been constructed, like Hirakud and Rengali, mine based industries have been established like Rourkela, NALCO, BALCO and defense projects have been set up like the H.V. factory in Koraput, air force base in Charbatia, Naval training academy at Chilka, and now NTR. These projects have displaced a large number of people without integrating them into an organised workforce. The result has been the growth of a marginalised population immersed in poverty and lacking skills. This history is now part of the consciousness of the Baliapal-Bhogarai struggle. Can we in this context afford to displace more such groups of people?

The NTR will ultimately develop the technology necessary for launching and targetting missiles. It will be used not only to further the technology and production of medium range missiles like the Prithvi, but also intermediate range missiles like Agni and even inter-continental ones. Given the present level of technology, it will be inefficient to use long range missiles with conventional warheads. This implies, that in all probability, nuclear warheads may be used. This raises a larger question relating to the nuclear orientation of our defense strategy. When the world over, there is a momentum to denuclearise the military,

do we want a project which might contribute to the problem?

Lastly, and more crucially, when more than fifty percent of our population lives below the poverty line, can we divert scarce resources to such large and wasteful projects?

These questions need detailed discussions as the country has not come to any consensus on these issues. A debate on these wide ranging issues is essential - a debate in which the voice of the people of Baliapal-Bhogarai will be listened to.

To help initiate the debate at the national level, a preparatory national convention was held on August 19, 1980 in Delhi. At the moment we are initiating a signature drive restricting ourselves to a limited demand, asking the government to reconsider the location of the project. We hope this initiative will help to build up a larger campaign on wide ranging issues raised by this agitation. Kindly collect as many signatures as possible and send signed copies of the appeal to the address given below as soon as possible.

Dr. Sujata Patel  
410, Block III,  
N.A.A. campus, JNU  
New Delhi 110067

### **An Appeal**

The constitution of India, not only guarantees democracy and a life of dignity, freedom and justice to all, including the poorest of the poor, but also puts forward a framework, within which these ideals may be achieved.

More than a lakh of people in Baliapal-Bhogarai block of Balasore district have been engaged, over the last four years, in a peaceful non-violent struggle, for obtaining the rights guaranteed by the constitution; for adequate livelihood, for clean environment and for survival. This struggle transcends political affiliations. It is a protest against the decision of the government to locate the National Test Range in this area. This project encompasses an area of about one hundred square kilometers covering fifty

five villages.

The government's decision to locate the project in this naturally rich and resourceful area, contradicts its own stated policy not to destroy but to aid the people to obtain a better life. All the people of Baliapal-Bhogarai, whether rich or poor, young or old, women or men are unitedly involved in this struggle to fight for their rights over their natural resources.

In this context, we urge the government, not only to make public the criteria for the selection of such sites but also to reconsider the location of the project in Baliapal-Bhogarai.

## Letter Box

I enjoy your newsletter for its ecological viewpoint from the "3rd World" and its independence from both U.S. and U.S.S.R politics. My group, "Neither East Nor West," networks with alternative and ecology opposition in the Soviet-bloc. We would very much like to have contacts with ecology and other groups in India and the "3rd World" who oppose both superpowers. Please write to us at: Neither East Nor West

C/o Bob McGlynn  
528, 5th Street, Brooklyn,  
NY 11215 USA

The new Anumukti get up frankly looked a bit shabby. The printing was not very smart though the type face was good. On the whole it had a smudged appearance.

Also, you must use recycled paper.  
Dr. Abhijit Das  
Chirag, Sitla via Mukteshwar  
Dist. Nainital 263138

Why is the new logo only in black and white? That red exploding atom looked so nice. Do put it back.

Jashodhara Dasgupta  
Chirag, Sitla via Mukteshwar  
Dist. Nainital 263138

Anushakti deserves death, not ANUMUKTI. However, as far as the journal is concerned, it is too technical and

has a poor get-up. Also, there is a lack of understanding of English even amongst the educated.

Certain magazines like India Today, Chitralokha, Science, Illustrated Weekly, etc. are popular and read with inquisitive interest. These magazines publish articles on all important subjects including technical subjects. Articles under the heading Anumukti should be made a regular feature in some of these magazines. I think that there can be a regular arrangement with some selected publications.

The other alternative is to go for an attractive get-up and make a personal approach to increase the number of subscribers through state level and national level organisations such as the University Grants Commission, Indian Medical Council, Indian Chamber of Commerce and so on. Life membership should also be considered by fixing say Rs.200/250 which would earn a regular yearly interest of about Rs.30.

Hirubhai Patel  
Sardar Vallabhbhai Samajseva Trust  
Sardar Bag, Mill Road, P.O.Box 51,  
Nadiad 387001

I have been reading from Anumukti in bits and pieces and I think it is a pity that it has fewer than a thousand subscribers. There are two things that I can immediately do. It would be possible for me to collect some funds to sponsor printing of a few issues. Another thing is to put a small advertisement in some dailies announcing the existence of Anumukti and its importance.

How I was awakened to the reality of nuclear affairs? In 1985 I had a chance to visit BARC in connection with some testing device they wanted. I had known by then that nuclear plants meant many fishy things but had not reached a decision that I would have nothing to do with it. Once inside the BARC, I found it very impressive, almost like a place in a science-fiction story. At the Nuclear Fuel Complex I met a 'scientist' named Mr. Khurana. Clad in orange with a picture of Rajaneesh on his chest he seemed quite at ease in the middle of many strange activities. "These are some

fuel rods for machining-well, they have extremely low levels of radioactivity. It cannot penetrate even the skin... I was a little uneasy but walked on bravely with him till we came to a big iron gate because here even the scientist said that the radioactivity could be higher. On his pushing a button the gate opened sideways and we saw in front a crucible containing uranium oxide for which an ignition device was required and which could be operated without going any closer. I asked what could be the radiation level where we were standing and the answer was that the man who monitored it was on leave. A few months later we had Chernobyl. And that same year it was also in my fate to experience the awesome beauty of the Periyar lake in Kerala and later on learn about the poisoning of the Periyar river by the Indian Rare Earth (IRE) plant at Alwaye. I could not sleep well because I had done business with IRE.

Kersi Sabawala  
Mohite Building, (Opp. Fairatna)  
Madan Zampa Rd. Barod: 390001

The journal is fine and very interesting. But there is clearly difficulty in sustaining inflow of India based information and articles. The reprints of foreign articles must continue, since these are inaccessible to the general reader directly and are quite informative. But articles by Indians would be of interest.

One possibility is to expand coverage somewhat to non-nuclear areas, and carry updates on the Bhopal gas tragedy for example. This must not of course expand too far, since then the journal would become too diffuse.

Why not ask the DAE people to present their point of view on each case, and ask experts to reply printing the full debate?

I understand that not all of the above might be possible given constraints. Thank you for the efforts made on our behalf.

Dr. Subodh Shenoi  
Physics Department  
University of Hyderabad  
Hyderabad 500134

Shri Kammaruzzaman from Durgapur sent us an appeal by the Greenpeace Antarctica Project Coordinator asking for letters to be written to the Prime Minister Mr. Rajiv Gandhi. The purpose of the letters is to influence India to support the French and Australian initiative to make Antarctica into a World Park and save it from mineral exploitation. I have not printed the appeal since the vote on this proposal was scheduled on October 18. But I want to thank Shri Kammaruzzaman for his trouble and hope that others too would not hesitate to use Anumukti columns to express their environmental concerns.

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