

# The Ecologist Digest

## Nuclear Power: Bombs, Accidents, and the Arms Race

**A-bomb maimed desert people**, David Leigh and Paul Lashmar, *The Observer*, April 3rd 1983.

Aborigines in the Australian desert were left in the path of nuclear fall-out and allowed to camp in radioactive craters during secret British atom bomb tests 30 years ago.

An *Observer* investigation in Australia has confirmed that groups of Aborigines were blinded, burned and perhaps died in appreciable numbers between 1953 and 1962, while the Australian authorities kept no medical records of their fate.

Classified Aldermaston documents, which we have obtained, also show that highly radioactive Cobalt-60 pellets were left scattered about the test site for years afterwards.

The Ministry of Defence admits that fall-out from Operation 'Totem I' in October 1953 passed over Aborigine encampments 100 miles to the north-east. But the Ministry claims that an Australian plane supplied measurements, 30 hours after the blast, showing the radiation level as very low.

The Defence Ministry says it 'cannot offer any explanation' for accounts of a black mist which engulfed Aborigines and left them with the characteristic signs of beta-ray radiation. A spokesman told us: 'Perhaps it was a whirlwind: it couldn't have been fall-out.'

**N-plant report omitted facts on polonium** Michael Morris, *The Guardian*, March 23rd 1983.

A Tory MP is pressing the Government to hold an inquiry into the failure of the National Radiological Protection Board to take the emission of polonium, a cancer-causing agent, into account in its published study on the number of people estimated to have died after the 1957 fire at Windscale.

The board's safety experts, who recently estimated up to 20 deaths resulted from the fire, now have revised their figures because they believe that polonium will have caused a further 12 deaths.

Mr David Hunt, MP for Wirral, a senior government Whip, asked Mr John Moore, the minister responsible for nuclear energy, why reported concentrations of polonium, known as Radium F, and possibly other emissions, were not mentioned by the board.

A board spokesman, admitting that it was embarrassed, said it had not known that polonium was released.

But British Nuclear Fuels, which took over the operation of the plant from the Atomic Energy Authority, 14 years after the incident, said that there were two reported measurements of airborne concentrations of polonium 210, one in the UK and the other in Holland.

On September 6, 1958, *Nature* magazine printed a paper on the emissions.

The board's spokesman said that in compiling a study it had gone to the official reports, otherwise it would have done its own research on the type of emissions and would not have been misled.

BNF maintained that the release of polonium in the fire had been public knowledge since 1958, but the MP said that it was not published in newspapers or generally available.

BNF emphasised that the average dose of polonium would have been very small. It added: "There is no radiological evidence that any harm will result from such low levels of radiation dose."

It also said that there was no evidence that anyone in the UK had contracted cancer or had died from cancer as a result of the 1957 Windscale fire.

**Nuclear jobs 'carry cancer epidemic risk'**, Joan Smith, *The Sunday Times*, April 10th 1983.

Workers in the nuclear industry in Britain and North America could face a "cancer epidemic" unless permitted levels of exposure to radiation are drastically reduced, a leading American scientist has warned.

Professor Edward P. Radford believes that risks from low levels of radiation are much greater than the scientific community has regarded them hitherto.

"I think that the evidence we are collecting from a variety of sources indicates that cancer risks from radiation exposure have been underestimated in the past by the nuclear industry," Radford told *The Sunday Times*.

One of the main trade unions in the British nuclear industry has stepped up its demands for the permitted radiation level to be lowered to a fifth of what it is now.

The general and municipal workers' union (GMBATU, with 3,000 members in the industry, has had its case boosted by a study by Dr Alice Stewart, reported on the BBC Nationwide programme, showing a startling high incidence of blood and lymph gland cancers among ex-soldiers and civilians who took part in nuclear bomb tests at Christmas Island during the Fifties.

Because of the growing scientific concern about the dangers of low-level radiation, the union wants to see the permitted level of exposure in nuclear plants reduced from the present limit of five rems per worker per year to one rem at most.

But Radford goes further. He urges that the level of exposure for workers under 35 should be reduced to only half a rem per year—a limit he also wants built into all new nuclear installations.

The union says evidence from medical research and the nuclear industry in the US and Europe shows that people working on pressurised water reactors, such as that proposed for Sizewell B in Suffolk, are exposed to between two and four times more radiation than from gas-cooled reactors and three times more than from the older generation of Magnox reactors, such as the existing A station at Sizewell.

## **Cancer toll high after atom tests, study shows, Clive Cookson, *The Times*, April 19th 1983.**

Scientists investigating the health effects of the 1957-58 nuclear weapon tests in the South Pacific claim to have found more deaths from leukaemia among the 330 cases studied so far than should have occurred among all 8,000 Servicemen involved in the tests.

Researchers from the Department of Social Medicine at Birmingham University report that leukaemia and related cancers had killed 27 out of 330 men whose medical histories they investigated with the help of publicity from the BBC's *Nationwide* programme.

They estimate that only 17 such deaths should have been recorded among the 8,000 believed to have witnessed the nine nuclear explosions in the Christmas Island area, or to have helped with the removal of radioactive waste.

The Birmingham group puts forward four possible explanations for the extraordinarily high incidence of radiation-related cancer: far more than 8,000 men were at risk; they received much more radiation than anyone realized; small doses of radiation involve a much higher risk of cancer than is supposed; or the men were exposed to other causes of cancer.

A spokesman said that the Ministry of Defence disregarded the study by the BBC and Birmingham University. It was unscientific and based largely on self-election by the participants or their families.

## **Defence chiefs juggle figures on bomb tests, *New Scientist*, April 14th 1983.**

British defence chiefs have criticised a survey which shows that servicemen stationed in the South Pacific during the atom bomb tests in the 1950s have abnormally high incidences of radiation-linked cancers. They say the survey is inaccurate because it is based on incorrect figures that the Prime Minister gave to parliament this year.

The survey, conducted by Dr Alice Stewart of the University of Birmingham, establishes that, out of 330 servicemen, 27 have suffered from cancers of the blood or lymphatic systems. This is about 10

more, she says, than would have been expected from the whole 8000 servicemen who, she says, took part in the South Pacific tests between 1957 and 1958.

The figure of 8000 is based on a statement by the Prime Minister in February 1983 that about 12,000 British servicemen and about 1500 civilians served during the whole of the South Pacific and Australian tests, which ran from 1952 to 1958. However, the Ministry of Defence (MoD) has told *New Scientist* that these figures are likely to be underestimates, and so the survey should be based on a population size that is "nearer 12,000".

Out of a population of 8000 "normal" men, 17.2 would be expected to die of such cancers. If the MoD's estimate of a population of 12,000 is used, then the expected number increases to 25.8.

## **Atomic death-toll divide, Joan Smith, *The Sunday Times*, April 3rd 1983.**

Scientists are sharply divided on the number of people who may have died of cancer as a result of the fire at the Windscale atomic plant nearly 26 years ago.

Recently, John Urquhart of Newcastle University claimed that as many as 1,000 deaths may have been caused by the emission of a previously-overlooked carcinogenic radioactive substance, polonium. Now the National Radiological Protection Board, intends to issue an addendum at the end of this month to its own report on the accident.

The board's director, John Dunster, says that Urquhart has overestimated the number of deaths from polonium a hundredfold. But even if that is so, it still means up to 10 more people may have died as a result of the fire than was previously thought. These would be in addition to the 13 fatalities from thyroid cancer estimated in the board's own report, published in February.

The startling figure from Urquhart of a possible 1,000 deaths was based on a calculation of the effect of polonium and led him to a claim, in the *New Scientist*, that the 1957 accident "could represent the worst environmental disaster that western Europe has known this century".

## **Britain is set to abandon nuclear reprocessing, Fred Pearce and Roger Milne, *New Scientist*, March 3rd 1983.**

The British nuclear industry is considering abandoning its commitment to reprocessing spent nuclear fuel from power stations before disposal. Instead, the fuel rods from the planned new generation of pressurised water reactors (PWRs) may be put into store for more than 100 years, before being buried in deep-rock formations, unprocessed.

This new twist to the ever-more-complicated story of Britain's plans for dealing with nuclear wastes, was confirmed by the Central Electricity Generating Board's chief witness at the Sizewell PWR inquiry, John Baker. He told *New Scientist* that "fortunately neither the AGRs nor the PWRs have fuels which require early reprocessing, as the Magnox fuel does". This means that the board will not have to



reprocess as soon as in the past "or ever at all".

Reprocessing is becoming an increasingly costly item in the fuel cycle of Britain's ageing Magnox reactors. Reprocessing of fuel from advanced gas reactors and PWRs will cost even more.

The plan to abandon reprocessing for the oxide fuels used in PWRs, such as the CEBG wants to build at Sizewell, is backed by Britain's biggest engineering firm, GEC. GEC Energy Systems has pioneered the design of dry-storage "warehouses" that could store the most radioactive wastes, such as spent fuel, for many decades.

The dry stores, says GEC, are cheaper than conventional water pools, leak less radioactivity and can be used for much longer periods. David Deacon of GEC Energy Systems wrote recently in the *GEC Journal of Science and Technology*: "It can be demonstrated that it is significantly cheaper to store fuel for medium to long periods and then to commit it directly to a geological repository, rather than to commit fuel to the reprocessing cycle."

Deacon's plan would involve every nuclear power station in Britain becoming a "mini-Windscale", storing many years-worth of spent fuel on-site. But the CEBG prefers the idea of a central store. The board says it needs such a store in any case in the 1990s because there may be a shortage of reprocessing capacity at British Nuclear Fuels' Sellafield plant. But the new admission that Britain is considering forgetting about further reprocessing plant opens up the possibility that the temporary store may become a long-term dumping ground for the industry's most dangerous waste.

**Fears of China Syndrome hot up**, David Price, *New Scientist*, April 7th 1983.

New evidence that increases fears about the consequences of a meltdown inside a nuclear power station after a major accident has been unearthed by nuclear scientists at the Institute for Transuranic Studies at Karlsruhe in West Germany.

The German scientists, led by Dr Hans Schmidt, have tested, for the first time anywhere, the thermal conductivity of molten uranium fuel of the kind used in pressurised water reactors (PWRs) throughout the world. A pool of molten fuel would form on the floor of the reactor during a meltdown. Schmidt's team have concluded that the molten fuel is five times less conductive than theoretical studies, on which the safety-design work for PWRs is based, had suggested. They believe that, if the heat in the molten fuel cannot be dissipated by conductivity, then the danger from the so-called China Syndrome, in which the hot fuel bores its way through the bottom of the reactor building, would be much higher.

British scientists at the UK Atomic Energy Authority's Harwell laboratories are sceptical about all this.

Even if the thermal conductivity of the fuel does turn out to be much lower than assumed, the UKAEA's Dr John Gittus believes that this "may not produce a significant increase in temperatures during a severe accident". Conductivity, he says, "is only one of the processes involved. There are also

convection and radiation, for example". Also, there are other substances in the molten pool, which would affect the picture, such as the zirconium alloy cladding round the fuel rods.

"In my evidence to the Sizewell inquiry," said Gittus, "I say that 99 per cent of core melt accidents would not cause a melt-through of the concrete base mat. We have generally concluded that the China Syndrome will not occur". On the basis of the present evidence, he does not intend to change his mind.

**Sloppy clean-up**, *New Scientist*, April 14th 1983.

As the fourth anniversary of the accident at the Three Mile Island nuclear reactor in the US passes, the crippled nuclear plant is once again the centre of controversy. This time the issue is the safety of the clean-up of the plant.

During the past fortnight engineers working on the site have charged, in affidavits, that the efforts to remove damaged uranium fuel from the reactor are sloppy. "The present mentality on the island emphasises short cuts, expedience, and disdain for professional standard," said Edwin Gishel, engineering director for site operations in an affidavit sent last week to his employer, the General Public Utilities Corporation. And Richard Parks, an engineer with the Bechtel Corporation, which built the plant and is the prime contractor for the clean-up, claimed that "the operation is disorganised and at times irresponsible. There is a serious lack of co-ordination between Bechtel, GPU, the subcontractor and the federal agencies involved here," Bechtel has since suspended Parks.

**US discloses new near-disaster at nuclear plant**, *The Guardian*, March 28th 1983.

The US Nuclear Regulatory Commission has revealed that there was a near re-run in February of the Three Mile Island disaster at the Salem 1 plant in New Jersey.

In an incident unprecedented in the history of civil nuclear power, the Scram safety system—which is supposed automatically to shut down the reactor in case of trouble—failed twice in three days. Even more worrying, the failure was caused by poor maintenance, and power station managers did not realise it had happened because they misread their computer record.

They did not appreciate that the safety rods had had to be inserted into the nuclear core by one of the reactor operators. He managed to take the emergency action within 24 seconds; had he waited much longer, there was a high risk of serious damage to the core and of a large release of radiation. One saving factor was that the plant was on low power at the time. Had it been running at full power, emergency measures might have been necessary for the safety of the 890,000 people living within a 30-mile radius of the plant.

The NRC has officially described the incident as "the most significant event involving reactor safety" since the Three Mile Island accident in 1979. Docu-

ments produced at the subsequent inquiry showed that in the past the commission had criticised the Salem plant for "repeated instances of missed surveillance tests, degradation of physical security, and marginally acceptable performance in other functional areas."

The failures of the Scram system occurred on February 22 and 25, when conditions in the reactor should have tripped the electrical motors which automatically insert the control rods.

The motors did not start either time because two circuit breakers failed, firstly because they had not been oiled for most of the 10 years they had been in operation, and secondly because, when one of them jammed in January, they were lubricated with the wrong oil.

The owner of the plant, the Public Service Electric and Gas Company of New Jersey, told the NRC it had never received the special maintenance bulletin put out in 1973 by Westinghouse, the plant's manufacturers. They also say that the February 22 failure was not noticed because an inexperienced operator in the control room "wiped out" an electronic display which would have shown that the circuit breaker had not functioned. It was consequently assumed that the shutdown had happened automatically rather than manually.

## **Unions to black dumping of nuclear waste in Atlantic, John Ardill, *The Guardian*, June 18th 1983.**

Three leading unions have announced plans to stop the British Government dumping nearly 4,000 tonnes of nuclear waste in the Atlantic.

The Transport and General Workers' Union, the National Union of Seamen and the train drivers' union, Aslef, will call on their members not to handle or transport the waste.

The Nuclear Industries Radioactive Waste Executive said that if it proved impossible to dump the waste it could be kept on land, but at increased cost and risk.

The unions called on the Government to hold the waste for two years while scientists check the possible harmful effects of marine dumping. This is in line with the decision in February of the London Dumping Convention, the international agency which regulates the disposal of hazardous wastes at sea.

Britain was one of six, out of 25 member nations which opposed the decision. Another of the six, Holland, has since changed its mind. The unions and the Greenpeace organisation point out that at the 1981 Commonwealth Conference in Melbourne, Mrs Thatcher signed a statement strongly supporting a call from the South Pacific Forum on all states not to store or dump nuclear waste in the Pacific.

## **Electricity Board critic is dismissed, Shyam Bhatia, *The Observer*, June 12th 1983.**

The Central Electricity Generating Board has sacked a nuclear scientist who claimed British plutonium was extensively used in the manufacture

of American nuclear weapons.

Dr Ross Hesketh, a senior scientist employed at the board's Berkeley nuclear laboratories in Gloucestershire, was summoned to London and told his services were no longer required.

He was given 12 weeks salary in lieu of dismissal and told to remove his personal belongings from the laboratories where he has worked since 1959. He was also told he cannot visit the laboratories unless escorted.

The board told Dr Hesketh that the reason for his dismissal was his refusal to take up a new job as section head within the structures and mechanisms branch at Berkeley. After he was informed about his proposed new job last March, Dr Hesketh, 54, complained to *The Observer* that he was being 'demoted' to the status of a 21-year-old graduate student.

His differences of opinion with the board emerged more than a year ago when he wrote a letter to *The Times*. In the letter, and in a subsequent BBC radio interview, he claimed that plutonium from Britain's civil nuclear power reactors had been sold to the United States for making nuclear weapons. The Government has always denied a direct link between plutonium used for civil and military purposes.

## **Warning on US tests was ignored, *The Times*, May 25th 1983.**

The safety chief at the first postwar atomic bomb test gave a warning in 1946 that the health of 42,000 American servicemen could be jeopardized by radiation fallout, according to a report prepared for a congressional hearing. It said the warning was ignored.

A once secret memorandum on the Bikini Atoll tests showed that another safety expert, identified only as "Captain Lyon of the radiological safety section," complained in vain about the disdain of ship commanders "for the unseen hazard" of radiation.

The fallout jeopardized sailors who slept on the decks of contaminated ships "with nothing more than shorts on," the memorandum said.

The report was based on letters and memorandum written or collected by the late Army Colonel Stafford Warren, who was radiological safety chief during the Manhattan Project that developed the atomic bomb and held the same job during the first two postwar atomic explosions, Operation Crossroads.

In one of those tests, a 6,000ft high column of radioactive water sprayed US Navy ships and their crews.

## **Emergency planning inadequate, Peter David, *Nature*, May 12th 1983.**

Two nuclear power plants already operating in the state of New York are to be closed down by the Nuclear Regulatory Commission because emergency evacuation plans for the local area are considered inadequate.

The NRC decision, the first time it has threatened



to close working plants because of worries about local evacuation, followed a report by the Federal Emergency Management Agency on a practice drill in March. The agency said two problems—the refusal of nearby Rockland County to join the planning and doubt about the availability of Westchester County bus drivers in an emergency—meant emergency planning was inadequate. About 290,000 people live within 10 miles of the reactors.

Spokesmen for the joint operators of the two plants, Consolidated Edison and the New York Power Authority, expressed confidence that any deficiencies could be remedied in time to avert a shutdown. They said that nuclear plants had operated safely at Indian Point for 20 years, and claimed the cost of a shutdown would be enormous.

NRC requirements for evacuation planning were stiffened after the accident at Three Mile Island in 1979 and have not yet been formally met at many plants. At Indian Point, considered by some scientists to pose the most complex evacuation problems in the United States, deadlines for meeting the requirements have been missed on two occasions, and the site has become a test of NRC's seriousness about emergency planning.

#### **NRC Relents on Salem, Clears Plant for Restart,** Eliot Marshall, *Science*, May 13th 1983.

Early in 1983, the Nuclear Regulatory Commission (NRC) delayed the restart of the Salem-1 nuclear reactor in order to devise an appropriate penalty for the sloppy management found there. On 26 April, the NRC relented. It ruled 4 to 1 that the owner—Public Service Electric and Gas of New Jersey—could turn the plant on again as soon as the NRC staff gives its approval. Commissioner Victor Gilinsky was the sole dissenter, voicing doubts about the adequacy of changes that have been made since a safety system failed in February.

The vote brought relief to the company, which has been losing over \$330,000 a day during the shutdown. No fine has yet been imposed.

#### **Salt mines may take nuclear waste,** Ted Stevens, *New Scientist*, May 19th 1983.

Britain's nuclear authorities are facing opposition almost everywhere that they look in search of suitable holes in the ground in which to dispose of "intermediate" nuclear wastes. There will be some 30,000 cubic metres of it in store by the end of the decade.

Cleveland County Council has told NIREX, the nuclear waste executive, that it will oppose the deposit of nuclear waste within its boundaries. NIREX wants to use a disused anhydrite mine owned by ICI at Billingham. In addition to this, British Gypsum, the owner of a string of disused gypsum and potash mines in Nottinghamshire, Staffordshire and Sussex, has said it will not offer any of its holes to NIREX.

The veto on all these sites narrows NIREX's options among existing mines to a handful of disused salt or brine works and disused hard-rock mines. Cheshire's numerous underground brine caverns are now prime candidates.

While the government has dropped its search for a repository for high-level waste, some environmentalists fear that the new "intermediate waste" dumps will be upgraded to take high-level waste.

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## **Chemicals, Drugs, Health and Pollution**

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#### **Drug industry chief criticised promotion tactics,** Andrew Veitch, *The Guardian*, March 9th, 1983.

Drug companies have been privately criticised by the president of the Association of the British Pharmaceutical Industry, Mr Peter Cunliffe, for "promotional excesses."

This appears to conflict with assurances from ministers and the industry that the ABPI code of practice on drug marketing was adequate to protect patients and doctors.

Mr Cunliffe, who is also chairman of ICI's pharmaceutical division, is reported in the minutes of an ABPI's meeting as reminding members that the code of practice committee had expressed misgivings about the "style of promotion . . . adopted by certain companies."

He said: "It was not acceptable for chief executives to expect results while turning a blind eye to the methods which their marketing departments adopted in achieving them. The industry's image was damaged by promotional excesses."

The meeting in October was in the wake of the row over Opren, the withdrawn arthritis drug. Opren's makers, Eli Lilly, and British subsidiary, Dista, were not named by Mr Cunliffe, but the firms were criticised at the time by doctors for spending more on drug promotion than they had on development.

The ABPI minutes throw light on a notoriously secretive organisation. The first reports of deaths among patients taking Opren were published in the *British Medical Journal*. Dr E. A. Stevens, of Pfizer, told the ABPI meeting that talks had taken place with the editors of the BMJ and the *Lancet* about reports of adverse reactions, and the time had come to meet those editors again. Mr. G. D. Snell, representing Squibb, said this was being pursued.

He added: "It was not possible to suppress reports, but the way in which things were reported was important." Mr J. Whitehorn, of Lilly, Opren's makers, said: "The treatment of the Opren situation in certain publications had been less than satisfactory."

## **Opren 'victims' start US legal proceedings, *The Times*, May 5th 1983.**

Several hundred alleged victims of the anti-arthritis drug Opren are to take legal action for compensation against Eli Lilly, the American manufacturers.

The decision comes after a denial by the drug company that Opren, or Benoxaprofen, is in any way responsible for deaths or alleged side effects and a refusal to compensate those claiming to be victims without making them prove negligence.

The committee said that through its lawyers it had "acted patiently and with integrity". It added: "A number of requests to the drug company to establish a 'no fault' compensation scheme have met with no helpful response."

The committee is urging anyone who has taken the drug, which was withdrawn from the market last year, and who suspects side effects, to get in touch with it. "We suspect that there may be many people who have developed unusual medical conditions while under treatment with this drug."

The action committee is coordinating claims through a network of about 50 lawyers in Britain acting for more than 400 alleged victims.

## **£1.8bn Opren claim, Andrew Veitch, *The Guardian*, June 21st 1983.**

Sixteen British families who allege that their relatives died or were harmed by the arthritis drug, Opren, are claiming damages totalling \$2,880 billion (£1,895 billion) from its manufacturer, Eli Lilly, which is being sued in the US courts.

The 16 British cases, plus one American case, all allege that the drug was sold without proper warning and without knowledge of harmful side-effects.

Eli Lilly has denied that Opren was responsible for ill-effects; or that the firm was at fault in developing the drug, marketed in the UK by its subsidiary, Dista Products of Basingstoke.

Opren was suspended by the Department of Health in August, and subsequently withdrawn by the firm after reports of deaths and side-effects. The Committee on Safety of Medicines has so far received 76 reports of deaths of people taking the drug, and 3,835 reports of side-effects.

## **Debendox war still on, Christine Doyle, *The Observer*, June 12th 1983.**

Debendox, the drug taken by millions of women during pregnancy to relieve sickness, has ceased production.

The sudden worldwide halt has followed swiftly on the heels of a \$750,000 (£500,000) award to a 12-year-old seriously deformed girl whose mother took the drug while pregnant.

Merrell Dow Pharmaceuticals, the manufacturers, said that its belief in the safety and effectiveness of the drug remained unshaken.

More than 300 cases have been filed in the United

States by parents who are increasingly convinced that their children's defects were caused by Bendectin, as the drug is known in the US, taken during a sensitive time in early pregnancy. Many have shortened limbs and missing fingers, similar to the defects suffered by Miss Mary Virginia Oxendine, whose family is now seeking punitive damages in addition to her \$750,000 compensatory award. Others have cleft palates and severe hernias.

The company insists its decision to stop making the drug was taken some time before the \$750,000 award to Miss Oxendine, and was based solely on the now crippling \$10 millions annual cost of insuring against lawsuits by Bendectin users.

Merrell's own major human study is admitted by the company to be flawed, though a spokesman argued that later, more sophisticated studies come to the same conclusion, namely that Bendectin cannot be linked with birth defects.

Suspensions about drug risks are considered by the American Food and Drug Administration: three years ago the FDA judged that there was residual uncertainty about Bendectin after reports of raised risk of severe diaphragm hernias. But a special FDA advisory panel was adamant that there was no evidence to conclude that Bendectin was causing birth defects.

Although stopping production, Merrell has not withdrawn the drug so pregnant women may continue to take it while stocks last.

## **Vietnam's Herbicide Legacy, Colin Norman, *Science*, March 11th 1983.**

A major epidemiological study conducted by Vietnamese scientists has turned up evidence of an increase in the incidence of congenital abnormalities among children whose fathers were exposed to herbicides during the Vietnam War. Several Western scientists who examined reports of the research at a recent conference in Ho Chi Minh City called the study "impressive," but cautioned that the findings are suggestive rather than conclusive.

The study is likely to influence debate in the United States over the long-term impact of the spraying on American troops who served in Vietnam. Some veterans have claimed that exposure to Agent Orange—the most widely used herbicide—caused birth defects in their children. But the evidence is anecdotal and comes from a self-selected group.

The most striking evidence linking exposure to herbicides with reproductive problems comes from a survey of some 40,000 families in northern Vietnam. Because all the spraying took place in the south, women in the northern villages were not exposed to herbicides or defoliants. The survey found that women whose husbands fought in the south—and who were therefore potentially exposed to the spraying—had a higher incidence of pregnancies resulting in stillbirths and congenitally abnormal offspring than women whose husbands had remained in the north. An independent follow-up study indicated that



the risk factor was about 3.5.

Studies of women in South Vietnam who had themselves been directly exposed to the spraying also showed an increase in birth defects apparently related to herbicides and defoliants. In particular, there was an increase in the incidence of neural tube defects, deformities of the sensory organs, deformities of the limbs, Siamese twins, and cleft lip among the offspring of exposed women.

Several studies have indicated a possible increase in the incidence of liver cancer and neurological disorders following herbicide exposure, but the evidence is "no more than suggestive," says Samuel Epstein, an epidemiologist from the University of Illinois School of Public Health who reviewed the studies at the conference.

Environmental impacts of the spraying are more obvious. "The combined ecological, economic, and social consequences of the wartime defoliation operation have been vast and will take several generations to reverse," states the conference report.

The destruction of strips of forest seems to have had a major impact on some animal populations. A survey in one heavily sprayed forest, for example, found only 24 species of birds and 5 species of mammals, but in two nearby control forests, 145 and 170 bird species and 30 and 55 mammal species were counted. The spraying may have created islands of forest too small to support some animal populations, and the defoliation may also have reduced food supplies during the time it took damaged trees to recover.

The impact on the country's mangrove forests is more severe. "The effects of spraying are widespread, long-lasting, and severe within the affected areas," the conference report states. A 1973 study by the U.S. National Academy of Sciences concluded that natural recovery of heavily defoliated mangrove forests would take at least a century, largely because destruction was so complete that few seed sources remained. Recent surveys have indicated that some minor "weed" species of mangrove are starting to recolonize damaged areas, but there has been no natural regeneration of the major commercial species.

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**Weedkiller with dioxin banned in Germany,** Pearce Wright, *The Times*, May 23rd 1983.

Another European country has stopped production of 2,4,5-T, the controversial weedkiller that contains tiny quantities of dioxin.

Production of 1,200 tonnes a year has been stopped in West Germany because new environmental regulations forbid the transportation of wastes contaminated with dioxin.

Although the German process for making 2,4,5-T produced a low level of contamination, it resulted in about four kg of dioxin contaminated waste each year. That was shipped to Antwerp for incineration on special ships in the North Sea.

The ban by the West German Government is another consequence of the dioxin waste controversy which erupted in 1976 from the explosion at the chemical works that devastated the small Lombardy town of Seveso.

**Seveso poison turns up in French village,** Anthony Tucker, *The Guardian*, May 20th 1983.

Forty-one barrels of deadly waste from the Seveso dioxin disaster, sought by police throughout Europe for eight months, turned up in a tiny village in northern France.

The dioxin, one of the most poisonous substances known to man, was found in an abandoned abattoir at Aguilcourt-le-Sart, a village of about 300 near the town of St Quentin. The waste, which went missing on entering France from Italy last autumn, has been the subject of a long and heated controversy involving Italy, France, Switzerland and West Germany.

Dioxin is a poison 10,000 times more toxic than cyanide.

The discovery was made on the basis of information from Mr Bernard Paringaux, director of the French waste disposal subcontracting firm, Spelidex, which took over the waste from a West German company, Hannesmann. He has been in prison since March 30 for contempt of court in refusing to reveal where the dioxin waste was.

The barrels are said to contain two tonnes of inert material mixed with dioxin and a leak or spillage could lead to a major disaster. The dioxin was left after the 1976 explosion at a chemical plant in Seveso, Italy.

The French Environment Ministry said last night that it would with Hoffman La Roche, study propositions for the "definitive destruction" of the dioxin.

Italy's Civil Protection Minister, said the Government would not allow the return of the dioxin.

**Europe tries to plug the toxic loophole,** John Coates and Giles Merritt, *The Observer*, May 29th 1983.

European governments are trying to block a dangerous legal loophole through which cargoes of hazardous waste can "disappear" once they cross a frontier. The loophole allowed 41 barrels of deadly dioxin poison from the Italian disaster village of Seveso to vanish for eight months until they were found in a disused slaughterhouse in northern France.

The problem arises because the waste-disposal authority or contractor in the receiving country is not legally required to notify the relevant authority in the country of origin, once the consignment has arrived and been disposed of.

Up to three million tonnes of hazardous industrial waste is transported across European borders every year. It is impossible to say how much and what types come to Britain for disposal because no government department collects the relevant

information. Waste treatment and disposal firms are reluctant to divulge figures for "commercial reasons".

Theoretically, the importation of hazardous wastes into Britain is strictly controlled by law, but the law can be flouted. A lorry loaded with a highly toxic waste such as dioxin could easily be driven off a ferry and into the country without the authorities noticing. Unlike drugs, industrial wastes are not prohibited items under British regulations. They do not even have to be declared as hazardous.

But like any other hazardous wastes moved inside Britain, imported material is governed by the Department of the Environment's Control of Pollution (Special Wastes) Regulations of 1980.

Before waste is imported, the owner must notify in advance the local authority responsible for licensing the disposal facility—a county council in England and district council in Scotland and Wales.

Once the consignment has landed and is on the move, the disposal authority for the port of entry must also be notified. It is then up to the disposal-site office to inform the disposal authority for the port that the load has arrived intact. There is therefore a check on loads going astray.

So much for the theory. The problem is that an unscrupulous importer ignores the law altogether. The maximum fine in a magistrate's court for breaking it is only £1,000. (The penalty in the crown court is an unlimited fine or up to two years in jail).

The importer or transport agent can, alternatively, declare, if asked, that the cargo is going for further industrial processing and is not therefore a waste product.

## **'Faked' data casts shadow over pesticides, *New Scientist*, May 19th 1983.**

A private laboratory, which was hired by American chemical companies to test the safety of pesticides, either faked or misread the results for over 200 substances. Many of these are now in worldwide use.

Industrial Biotest Laboratories (IBT) of Illinois was the chemical industry's most popular laboratory for generating safety information on new pesticides for eventual review and approval by the American Environmental Protection Agency (EPA). In 1977, federal investigators found serious flaws in tests performed by IBT.

Four IBT executives are now on trial in Chicago accused of fraud. The court's inquiry has begun to reveal the extent of the company's activities. For instance, 15 per cent of all pesticide chemicals on the market are now of questionable safety because of IBT's errors according to an EPA report. Documents from EPA show that the agency stopped approving new chemicals bearing IBT's mark in 1977.

But in 1982, the agency had not retested all the suspect pesticides, and decided then to discontinue

re-evaluation. The EPA now wants the manufacturers, including companies such as Monsanto, Dupont and Dow, to do the re-evaluation themselves.

The EPA has not withdrawn any of the chemicals now sold because they were considered safe by IBT. The EPA's officials say they can do so only if the chemicals are proved to be dangerous.

## **Kenya to ban dangerous pesticides, *Michael Cross, New Scientist*, March 17th 1983.**

Kenya is drawing up a list of pesticides and medicines to be banned. This follows reports that foreign companies are using dangerous pesticides in places where safety precautions are impossible, and that other companies are still promoting drugs that are banned or controlled in Europe and US.

Philip Leakey, Kenya's deputy environment minister, told *New Scientist*, that the problem of "dumping" by foreign companies is continuing, despite mounting pressure around the Third World. Last year the British American Tobacco company stopped spraying plantations after reports in *New Scientist*.

The Nairobi *Daily Nation* has reported that drug stores were selling some medicines containing anabolic steroids and chloroform as being "suitable for children".

Leakey said "there is no question that companies are guilty of promoting and exporting these (dangerous) chemicals into developing countries. We are victims of the industrial world".

The pesticides law will ban chemicals that require special safety precautions unless farm owners can show the government that their workers are able to use them safely.

One of the biggest curbs on the unnecessary use of pesticides could be Kenya's chronic shortage of foreign currency. Leakey said he tells farmers who complain about the cost of chemicals to employ labourers to clear pests. "One farmer came back and said that employing 300 Kenyans cost one-fifth as much as weedkiller," he said. "But we still have to combat the promotional skills of chemical companies."

## **Moves to curb pesticides attacked, *James Erlichman, The Guardian*, June 20th 1983.**

Attempts to restrict the unlimited flow of dangerous pesticides into Third World countries from the EEC were attacked as "naive and counter-productive" by Britain's pesticide manufacturers.

Campaigners hoping to safeguard developing countries are half way to their goal of getting EEC directives passed which would require written consent from Third World governments before dangerous pesticides could be shipped from EEC countries.

The legally binding directives would hit UK pesti-



cide manufacturers hard.

Britain's pesticides industry, with sales of more than £540 million, is the third largest in the world and half of all its sales goes abroad.

Nothing now prevents pesticides banned or severely restricted for use in Britain from being exported to countries where no safeguards are in force.

But a committee of the European Parliament has passed a resolution to ban sales of restricted pesticides without prior written consent from recipient governments.

A similar proposal is now lodged with the EEC Council of Environment Ministers.

But Mr Chris Major, director of the British Agrochemicals Association, believes the directives would perversely result in more pesticide deaths in the Third World.

"Exports from responsible EEC manufacturers would get clogged up because, sadly, the machinery for approval is often lacking." Low quality pesticides from Eastern Europe and elsewhere would simply flood in to fill the gap, he said.

**Clean water next**, Geoffrey Lean, *The Observer*, May 1st 1983.

Mr Tom King, the Environment Secretary, is to make the problem of nitrates in drinking water one of his pollution priorities, after the Government's decision to ban lead from petrol.

He says the issue was drawn to his attention by *The Observer*, which two months ago published details of draft official reports showing that nitrate levels, increasingly suspected of causing cancer, are rising alarmingly in most of Britain's water supplies.

Since our publication of the reports, the Department of the Environment has abolished the committee that prepared them. But Mr King regards the issue as potentially so important he is going to concentrate his attention on it.

His concern over nitrate pollution is shared by farmers, who are responsible for causing the pollution which comes from fertilisers. Since publication of the reports' findings, several have written to *The Observer* saying they would be prepared to accept government controls on fertiliser use.

Mr T. Stockdale, who farms at New Abbey, Dumfries, wrote: 'Farmers have been subjected to three years of advertising and advice to use more nitrogen. Through no fault of their own, they are probably the victims of a system which requires more and more inputs to raise output in order to achieve a margin that will provide a living.'

'They are having to run faster and faster because they fear that if they stop their system will collapse. It is the agricultural advisory and research organisations who need to be called to account for what is happening.'

Mr Ivor Ponting, a farmer from Andover said: 'I do not think the Government realises the seriousness of the situation. Some sort of taxation should be put on fertiliser to cause us all to slow down.' Ironically,

Ministry of Agriculture officials are fighting proposals in a confidential Organisation for Economic Co-operation and Development report for a fertiliser tax, on the ground that farmers will not support it.

**Dubious tests of loyalty for committee members**, Stephen Budiansky, *Nature*, March 10th 1983.

A document sent anonymously to Senator Gary Hart's office last week has added yet another twist to the controversy surrounding the Environmental Protection Agency (EPA). The document, a list of scientific advisers and employees of the agency with ratings of their political leanings, was said by the anonymous source to have been compiled by a member of the Reagan transition team who has since gone on to become an official of EPA.

The ratings include such comments as "at technical level rely on 120 per cent; policy level a bleeding heart liberal" (Dr Elliott Montroll, a distinguished mathematical physicist at the University of Maryland); "poison, like Sam Epstein, he is a Nader on toxics" (Dr Matthew Meselson, a biologist at Harvard University); "clean air extremist" (Dr Edward Crandall, a pulmonary physiologist at the University of Pennsylvania); and several variations on "get him out", "a menace", "fair scientist, bad policy" and, in a reference to the endangered species that held up a major dam project, " 'snail darter' type".

EPA officials deny that such considerations have influenced appointments to the agency's advisory committees.

The document also contains general comments about several of EPA's programmes. Thus it states:

"Radiation programme: Group is responsible for contrived public awareness for the sole purpose to scare. They should all go.";

"Toxic substances programme: Get rid of them all. All known by reputation as menaces . . .";

"Oceans programme: Mr Cleans committed to hard-line against ocean deposition, not there for advice, but answering the question of what can we say to shore up our position.";

"Research and development programme: What have they done to earn their money? Is there a need for any? They all seem to be invidious environmental extremists."

**Another hit-list and more embarrassment**, Stephen Budiansky, *Nature*, March 24th 1983.

New evidence has come to light of apparent political manipulation in staff appointments and agency actions at the US Environment Protection Agency.

First, the EPA official named in connection with the so-called "hit-list" of scientific advisers, Louis Cordia, was asked to resign amid charges that he had destroyed files being sought under a Freedom of Information Act request and his own admission that he had prepared a second "hit list" of agency employees.

This list, the first few pages of which were found in Cordia's files by congressional investigators, con-

tains comments from Cordia's "close advisers"—apparently industry and conservative groups—on current and prospective EPA employees. Many are couched in ideological terms. Roy Albert of New York University, who serves on EPA's Carcinogen Assessment Group, is called "unacceptable to this Administration"; other comments include "philosophically attuned, professionally acceptable", "supportive of the new Administration if the new Administration is for nuclear power, business and conservative interests", and "understood to have brought in many votes on 4 November", a reference to the date of the election.

Meanwhile, John Hernandez, now acting EPA administrator, is feeling the heat of the congressional investigation. Hernandez admitted that he had allowed Dow Chemical Company officials to read a draft report on dioxin contamination from its plant in Michigan and to suggest changes that deleted any reference to Dow's responsibility. While denying that he himself ordered the changes in the report, Hernandez admitted that he urged EPA staff members on several occasions to consider Dow's suggestions.

**Acid rain kills Welsh fish, *New Scientist*, May 12th 1983.**

Acid rain is decimating the fish stocks of many Welsh rivers, according to a report presented to the Welsh Water Authority by Roscoe Howells, its director of scientific services.

A survey has revealed that "many of the upland streams, rivers and lakes draining afforested catchments in Dyffed and Gwynedd (south-west and north-west Wales respectively) cannot now support natural fish populations and have depleted populations of aquatic plants and animals."

In the river Tywi in mid-Wales "native brown trout cannot survive the combined effects of the acidity and elevated aluminium concentrations found in water draining from conifer forests in the area." The Berwyn catchment in north Wales is now too acidic even to support the American Brook Charr, which was introduced specifically to cope with the acid. Howells adds: "The genetic implications of introducing exotic species are causing concern."

In the Brianne catchment of mid-Wales streams with a hardness of less than 8 milligrams per litre of calcium carbonate "have a depleted flora and fauna and salmonid fish are either absent or present only in small numbers."

The report goes on to warn that "failure to neutralise acidic waters can result in excessive corrosion of (water) mains with, in some areas, unacceptably high lead levels due to plumbo-solvency" (that is, lead in pipes being dissolved by the acidic waters).

**Antibiotics on farms bring new dispute, John Young, *The Times*, June 16th 1983.**

Fresh controversy has arisen in the United States over a proposal by the Food and Drug Administration (FDA) to relax controls on the use of antibiotics in animal feeds. Consumer groups claim that their regular use makes bacteria more resistant, and that that resistance may be transferred to human infec-

tions.

Mr John Dingell, chairman of the House of Representatives energy and commerce subcommittee on oversight and investigation, says there is evidence that the effectiveness of penicillin and tetracycline in the treatment of human illnesses has declined.

According to a report in *The New York Times*, the FDA appears to be facing both ways on the issue. On the one hand it is calling for a total ban on the use of antibiotics, but on the other it is arguing that, so long as certain medicated feedstuffs are permitted under regulations introduced 10 years ago, it is unfair to ban new competing products.

**Health fear over pork, Graham Rose, *The Sunday Times*, June 26th 1983.**

The illegal use of a drug to promote growth in pigs is widespread on British farms despite the possibility that traces of it in pork could cause serious harm to people undergoing treatment for heart conditions.

Monensin sodium is licensed only for use on broiler chickens and beef cattle. Its manufacturers, Elanco, say it speeds growth rates by as much as 10 per cent.

Many farmers are so impressed with it that they are also using it as a food supplement for tens of thousands of pigs, apparently oblivious to its possible effects on humans.

The effect of monensin sodium has been investigated by Bill Butterworth, a Middlesbrough-based agricultural consultant. He is worried because medical research in America shows that even small doses of the drug can effect the human heart, and could cause serious harm to people being treated with digitalin—about half a million in Britain—or a number of other drugs prescribed for people with heart trouble.

Butterworth says farmers freely admitted to him that they had been using the drug on pigs. The Ministry of Agriculture says it is aware of the misuse of the drug but that it has "no quantitative assessment of that use".

**Killer bacteria invade hospitals, Oliver Gillie, *The Sunday Times*, June 26th 1983.**

A new variety of bacterium, resistant to all the common antibiotic drugs, is invading hospitals in the British Isles. Similar bacteria have caused great problems in the United States and Australia, where some hospitals have found them impossible to get rid of.

The bacterium is a variety of *Staphylococcus aureus*—a germ which is commonly present on the skin and causes minor infections such as pimples, boils or infected cuts. In healthy people such infections are seldom a problem but in a hospital the same bacterium may infect wounds and cause complications which can kill seriously-ill patients.

An outbreak of the resistant bacteria has caused the intensive-care unit at the Royal Free Hospital in London to be closed. One patient in the unit died



partly as a result of the infection. The other patients were moved to another ward to enable the intensive-care unit to be closed for cleansing.

**Child puberty drug in meat**, Annabel Ferriman, *The Observer*, May 29th 1983.

Eating chicken or beef fattened with powerful oestrogen-based drugs may result in girls of only five or six reaching puberty.

Such drugs are now illegal in Britain but scientists fear that if all artificial fattening agents are banned under EEC regulations a black market could develop.

Evidence that these drugs can cause premature puberty in very young girls is emerging from Puerto Rico.

Girls of only five and six have developed breasts and started menstruating while some young boys have become feminised, also developing breast tissue.

A one-woman campaign to publicise the problem is being waged by Dr Carmen Saenz, an endocrinologist on the island, who has catalogued 3,000 cases.

She is convinced they are the result of the girls eating artificially fattened chickens, because when they exclude poultry from their diet their symptoms disappear.

She suspects the fattening agent being used is diethylstilboestrol (DES), a powerful synthetic oestrogen that is widely banned for farming use throughout the world because it is thought to cause cancer.

It is banned, for example, in the United States, Britain and in Puerto Rico itself, but investigations by Dr Saenz, using a private detective, showed it could easily be bought from agricultural shops on the island.

Dr Ray Heitzman, a senior principal scientific officer at the Agricultural Research Council's Institute for Research on Animal Diseases, thinks the five animal growth promoters allowed in Britain under the Medicines Act are safe but is concerned about what could happen if they were banned by the EEC.

He predicts a black market would develop as exists in some parts of Europe, and the substance that would most probably be used would be DES, because it is cheap and easy to produce. Pressure to ban all artificial growth promoters throughout Europe is coming from the consumer movements in France, Italy and Germany.

Three of the agents now allowed are naturally occurring steroids but the other two, zeranone and trenbolone acetate, are synthetic hormones and there is pressure to ban them.

The European Council of Ministers intends to make a decision by July 1984 and it is quite possible that at least the two synthetic growth promoters could be banned.

**Lead threat to children**, Liz Barden, *The Observer*, June 12th 1983.

Five hundred children living in the Antwerp suburb

of Hoboken in northern Belgium have been found to have such dangerously high levels of lead in their blood that a local doctor has called for them to be evacuated from their homes.

The children all live near a 100-year-old factory which ranks among the world's leading producers of non-ferrous metals, including lead, arsenic, cadmium and zinc.

They have suffered repeated acute lead poisoning attacks, serious enough for hospital treatment.

**Lead risk in city grown vegetables**, *The Times*, March 18th 1983.

Many vegetables grown in inner city gardens contain so much lead that they are unsafe for children and pregnant mothers, according to the Campaign for Lead-Free Air (Clear).

Dr Robin Russell Jones, deputy chairman of the campaign, said that a survey of carrots, turnips, beet-root and sprouts showed that it was unwise to grow vegetables in cities and near main roads because of lead pollution from vehicle exhausts. About 40 per cent of the soil in inner London was unsuitable.

Its claims were supported at a London press conference yesterday by Dr James Bevan, a general practitioner from St John's Wood, north London. He said he was not worried by the effect on adults of lead in vegetables.

"I am concerned for the pregnant mothers and the small children, because lead seems to damage the developing brain far more than the developed brain", he explained.

The Government rejected the campaign's claims, but said that a working party of 20 was investigating the impact of lead on groups at special risk.

**Asbestos controls 'may be too lenient'**, Paul Keel, *The Guardian*, July 1st 1983.

Regulations controlling asbestos dust in industry may be far too lax, according to a committee set up by the Health and Safety Executive.

The committee's report, which has become a source of embarrassment to the executive, suggests that the present limit of one million fibres per cubic litre of air may well have to be strengthened ten-fold in order to provide adequate protection to employees.

The unpublished report of the Asbestos Working Group, chaired by Mr Steven Grant, the Scottish area director of the Health and Safety Executive, says that a higher limit would give the industry and its inspectorate a correct objective rather than the "spurious one" provided at present.

When their report was submitted internally in May Mr Bill Simpson, the executive chairman, wrote to Mr Grant asking him and his colleagues to reconsider their findings.

His letter concluded: "In short I am concerned that your report would be seen as undermining the recommendations of the Advisory Committee on Asbestos and would lead to a renewal of the controversy over asbestos which has already been thoroughly ventilated."



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