

Nuclear fuel plant mystery

by Colin Norman, Washington

A TECHNICIAN employed at a nuclear fuel fabrication plant in Oklahoma died in an automobile accident on November 13 last year when her car careered off a highway and struck a concrete culvert. The crash has brought national publicity to a bitter dispute over safety standards at the plant and sparked off a string of bizarre allegations which could reverberate for years.

When the accident occurred, the technician, Karen Silkwood, was on her way to meet an official of the Oil, Chemical and Atomic Workers' Union (OCAW) and a reporter from the *New York Times*, to discuss charges of lax safety precautions at the plant and allegations of faulty manufacture of plutonium fuel rods. Police investigators ruled out foul play and said she probably fell asleep at the wheel, but the union hired an automobile crash expert who concluded that she may have been forced off the road by another car. The matter is now under investigation by the FBI.

Although that event was mysterious enough, a series of reports by the Atomic Energy Commission (AEC) which investigated Miss Silkwood's charges have added yet another element of mystery to the affair.

Miss Silkwood and officials of OCAW launched the AEC investigations when they met AEC officials on September 27 last year to give details of 39 separate violations of safety regulations

which they alleged had taken place at the fuel fabrication plant. Operated by the Kerr-McGee Nuclear Corporation at Crescent, Oklahoma, the plant manufactures plutonium fuel rods for the Fast Flux Test Facility, an experimental breeder reactor installation being constructed in Washington State.

In the meantime, Miss Silkwood discovered on November 5 that her hands were contaminated with plutonium after she had been working with a glove box handling plutonium samples. She was decontaminated and found to be free from plutonium when she left the plant later that night. But when she reported for work the next morning, her hands, forearm, neck and face were again found to be contaminated with plutonium.

Then, on the morning of November 7, a nasal smear taken when she reported for work indicated a high level of plutonium contamination yet again, and urine samples she had collected over the previous two days were also found to contain significant levels of the substance. A subsequent check of her apartment led to the discovery of microscopic amounts of plutonium in the bathroom, kitchen and refrigerator, and her flatmate was also found to have two spots of low level contamination on her skin.

An investigation of those incidents was launched by the AEC immediately, but a report released by the commission last week simply adds to the confusion. The AEC investigators found, in short, that Miss Silkwood's contamination "probably did not result from an accident or incident within the plant",

and that the plutonium discovered in the urine samples "was not present in the urine when it was excreted". Finally, they suggested that Miss Silkwood "did ingest some plutonium on or about November 7, 1974".

The essence of those findings is that the AEC believes that Miss Silkwood may have contaminated her own skin, swallowed a tiny amount of plutonium and added plutonium to her urine samples. No explanation is offered of the reasons for taking such action, although others have speculated that she may simply have wanted to draw attention to the allegations of lax safety precautions at the plant. If so, self-contamination with plutonium seems an incredibly drastic step to take.

The Oil, Chemical and Atomic Workers' Union has sent the AEC's report to some scientists for review, on the basis of which Mr Anthony Mazzocchi, the union's Washington representative, said in a report to Kerr-McGee's union members last week that because Silkwood had a high respect for plutonium, "it is inconceivable to us that she would contaminate herself or her apartment deliberately". He suggested that "there is enough evidence to cause an investigation to be commenced into the possibility that Silkwood was intentionally contaminated by sources unknown to her", and called for the AEC to reopen its investigation.

Meanwhile, the AEC investigated the other 39 allegations of safety violations raised by Miss Silkwood at the September meeting, and came up with some evidence of inadequate precautions. The report, however, largely exonerated the plant management and the AEC termed most of the incidents minor.

A close reading of the report, however, indicates that even though some of the allegations may have been exaggerated, the AEC's findings still paint a fairly dismal picture. Take, for example, the allegation that there is a turnover of 60% of the work force at the plant each year. The claim, says the AEC is not substantiated because the actual turnover is 35%, which is still an amazingly high figure. Similarly, the AEC says that the allegation that 80% of the work force has less than two years of experience is incorrect. The actual figure is 62%.

● In Britain, the possible dangers of working with plutonium have been highlighted in the past few weeks by reports that the health records of workers at the British Nuclear Fuels Windscale works showed a small but significantly higher incidence of leukaemia than might be expected. Although the statistical validity of these results is still being debated, at least one union is undertaking an investigation into the situation. □

How do you get over the problem of calcium loss, particularly from the knee joints, during long space voyages? Recruit double amputees for astronauts, says Dr John M. Vogel, a specialist in nuclear medicine, working at the University of California at Davis.

As nobody has yet found a successful means of preventing calcium loss at the knee joints during periods of prolonged weightlessness, the Californian team is seriously investigating the next best thing: dispensing with knees altogether. As there are people around who have already lost their legs, why not make use of them as space pilots?

There could be many benefits from having legless astronauts. It might be possible, for example, to carry more of them in a given size of spacecraft than of the conventional biped astronauts employed so far. Double amputees would also presumably eat less food, and breath less air; and, being more compact, would probably find the cramped living conditions of

a spacecraft more comfortable than would two-legged astronauts. And the use of artificial legs instead of real ones during space walks or sorties on to planetary surfaces may prove a positive advantage. Not requiring the protection of a space suit, such legs would be in their natural environment in space rather than being less useful than real legs, as they seem on Earth. And as extravehicular activity would be carried out largely with the help of machinery anyway, with planetary 'buggies' and the like, the fewer human limbs to cater for, the better.

Of course, this whole philosophy could get out of hand. One could imagine armless astronauts ultimately, or perhaps, as medical science advances, even more bizarre developments. The Californian team is making its study in preparation for a possible voyage to Mars, which would take about six months with present technology. So, double amputees watch out for the advertisements.

from Peter Goodwin