

tribution to the UNIDO plan for twin international centres for genetic engineering and biotechnology at Trieste, Italy and in New Delhi.

The Department of Environment has allocated funds for setting up a chain of botanical gardens for building a germplasm bank of economic plants, and seed and pollen banks for the conservation of threatened species. The department will also initiate this year a five-year £180-million programme to clean up the polluted river Ganges.

The Department of Space, which gets the second biggest share in the budget, plans to set up five regional remote sensing service centres to facilitate use of aircraft and satellite-sensed data and to provide trained manpower. Images received from Landsat will be augmented with data to be obtained from the French SPOT satellite. The space department will also start work on a new launch-pad for orbiting satellites in polar orbits. The polar launch station is expected to become operational in 1992.

K.S. Jayaraman

UK embryo research

Voluntary authority set up

THE British Medical Research Council (MRC), in association with the Royal College of Obstetricians and Gynaecologists (RCOG), last week replied to the government's inquiry into human fertilization and embryology (the Warnock report). MRC endorses the inquiry's recommendation for a licensing authority for research in these fields, and, recognizing that legislation will take some time, has set up a voluntary licensing authority under the chairmanship of Dame Mary Donaldson and consisting of MRC and RCOG scientists and doctors as well as lay members. The authority would both license experiments and draw up a code of practice. Although agreeing with the Warnock committee's 14-day limit on experimentation on embryos, MRC prefers that the limit be set in terms of stage of embryo development rather than days after fertilization, because of variations in the rates of growth between embryos.

MRC also seeks to address wider issues than those covered by the Warnock report: to define the term "embryo" (a viable conceptus developed from a fertilized egg and not tissue or cell cultures) and that "research" should include "new and untried treatment", a concept excluded in the Warnock report.

Human embryo research was not financially supported at all by MRC before the first British "test-tube" baby was born. Since then, MRC has recognized that research can improve understanding of infertility, may prevent some inherited diseases and congenital abnormalities and may produce safer contraceptive methods. Possible lines of research include:

- Finding the best culture conditions for egg maturation, of help to people suffering recurrent miscarriages after normal conception.
- Tests on defective sperm function, involving egg penetration and subsequent limited development of the fertilized egg. (Up to 50 per cent of human infertility is due partly to male-related disorders.)
- Some 60 per cent of eggs fertilized *in vivo* do not develop beyond implantation because of fetal abnormalities and unknown factors.
- Some congenital abnormalities (for example, Down's syndrome, spina bifida)

probably occur during sperm and egg development.

- Better understanding of the development of chromosomal abnormalities.
- Investigation of infertility caused by production of antibodies to sperm in some women. Such research could lead to a contraceptive vaccine.

The MRC/RCOG report is one of many being submitted to the government. Eventually, legislation will result. But if the Powell bill (see *Nature* 21 February 1985, pp. 612 and 618) becomes law, considered reports such as the MRC statement will be so much wasted paper, for all research and development involving human embryos will be illegal. Techniques such as GIFT (gamete intrafallopian transfer), developed in Texas, where an unfertilized egg is removed from the ovary and immediately transferred to the fallopian tube where it can then be fertilized, would never be developed with such a bill operating. Later this month the first such baby will be born in Britain.

Maxine Clarke

Hazardous chemicals

Congress acts on clean air

Washington

IN the wake of the Bhopal disaster, pressure is mounting in the United States to enforce new limits on emissions of toxic substances from chemical plants.

The effort has been given a recent impetus by a series of revelations from Union Carbide (which operates a methyl isocyanate plant in West Virginia) and other chemical manufacturers concerning accidental and routine venting of hazardous substances. In responding to a survey conducted by the subcommittee on health and the environment under the chairmanship of Representative Henry Waxman (Democrat, California), 67 chemical companies acknowledged venting a total of some 204 chemical substances that the companies themselves identified as "hazardous". Many of the companies had been reluctant in the past to provide this data; Waxman approached the companies directly after

discovering that the Environmental Protection Agency (EPA) had failed to collect this information in connection with its existing programme of regulating hazardous air pollutants.

The subcommittee is still analysing the data and will not release a complete report for several weeks. But a preliminary survey shows that at least a few plants emit surprisingly large quantities of hazardous substances. Borg Warner, for example, reported that one of its plants in West Virginia releases some 8,000 pounds of acrylonitrile, a known human carcinogen, into the air each day.

The subcommittee also found striking variations in emissions between similar plants run by different companies, and even between plants in different states run by the same company.

Under current EPA regulations, only five chemicals are controlled as hazardous air pollutants: vinyl chloride, benzene, asbestos, beryllium and mercury. Congress's environment committees have complained for years about EPA foot-dragging; EPA has listed 27 substances as "suspected hazards" but has not yet decided whether to issue control regulations. Although the legislative history of the 1970 clean air act shows that Congress expected EPA to consider regulating at least 12 specific substances (including chlorine gas, hydrochloric acid, several heavy metals, pesticides and radioactive compounds), the law itself gives the agency broad discretion to decide what constitutes a hazardous air pollutant and what action to take to limit release of pollutants into the atmosphere.

EPA has further provoked Congress by recently proposing a relaxation of controls on emissions of vinyl chloride, a known human carcinogen. Under existing rules, plants that produce vinyl chloride may only vent the chemical through relief valves under emergency conditions. Each time a venting occurs, EPA investigates the incident to determine if it could have been prevented; if it was preventable, the company is subject to civil or criminal penalties. Yet EPA records show that "emergency" venting of vinyl chloride is almost routine; one million pounds was released into the air during the period 1977-80. EPA is now proposing to recognize the fact by allowing each plant four to seven "free" ventings per year; EPA would no longer investigate each incident.

Waxman's subcommittee is working on a bill that would require EPA to produce regulations on a specific list of chemicals and with deadlines incorporated into the legislation. Similar efforts (albeit milder) have been passed by various subsets of Congress as part of proposed revisions of the clean air act, but always to die as the act itself founders on unresolved differences over other issues, notably acid rain controls. Waxman will try to have his bill considered as a separate piece of legislation, not tied to the clean air act.

Stephen Budiansky