BHOPAL

Deal is less than final

New Delhi

THE drawn-out dispute between Union Carbide Corporation and the Indian government over liability for the Bhopal poison gas disaster may not be over after all. Although a settlement was reached last year between Union Carbide and the government, then led by Prime Minister Rajiv Gandhi, the new National Front government of Prime Minister Vishwanath Pratap Singh is now seeking to overturn the settlement. Singh's government argues that the settlement was not lawful; Union Carbide contends that it cannot be reviewed just because the government has changed.

More than 3,700 people were killed and tens of thousand injured by the cloud of toxic chemicals that swept out of Union Carbide's subsidiary plant at Bhopal, capital of Madhya Pradesh, in December 1984 in the world's biggest industrial disaster. After protracted litigation that travelled from courts in Bhopal to New York and back to India again, the Supreme Court pronounced a final settlement in February last year.

The settlement required Union Carbide to pay $470 million in compensation to the gas victims. In turn the Gandhi government — which by a special act of parliament had taken upon itself the right to represent all the gas victims — agreed to drop all criminal cases against Union Carbide and grant immunity against further legal action.

These two clauses in the settlement agreement are now being reviewed again by the Supreme Court. Attorney general Soli Sorabjee informed the court that they were contrary to public policy and amounted to the surrender of sovereign criminal jurisdiction. For its part, Union Carbide describes the government's move as a "political and a legal fraud". The company's counsel, Fali Nariman, argued that Singh's government is bound by the contractual obligations of its predecessor. In any case, according to Union Carbide, the settlement cannot be changed because the Indian government has already appropriated the compensation money paid by Union Carbide.

Because of the renewed litigation, the settlement money paid by Union Carbide in 1989 is still untouched and gathering interest. The Indian government has told the court that the money will not be returned to Union Carbide until the dispute over damages is settled. Union Carbide, however, demands the return of the money with interest if the earlier settlement is struck down by the court. A ruling is unlikely before next month.

K. S. Jayaraman

EUROPEAN COLLABORATION

Faltering steps to superlaser

London

LASER physics is set to be the next field of 'big science' in which European nations will pool resources to compete with the United States and Japan. Senior officials of science funding agencies from the United Kingdom, France, West Germany, Italy and Spain met in London in July to discuss a project to build a 100-kJ ultraviolet laser facility. The instrument will allow European physicists to study plasma behaviour and fusion of hydrogen isotopes, freeing them from the need to buy time at US and Japanese laser facilities.

The meeting, held at the Royal Society in London and hosted by the UK Science and Engineering Research Council (SERC), considered a report describing two alternative technologies. The conservative option, to build a larger version of existing neodymium-glass lasers, would be expensive and relatively energy-inefficient. Newer krypton fluoride excimer lasers would lack these disadvantages and provide for rapid recycling after each firing. But the technology is in an early stage of development, with the largest KrF laser a mere 1-kJ facility at Los Alamos in the United States.

Sigbert Witkowski, director with responsibility for lasers at the Max Planck Institute for Quantum Optics at Garching, near Munich, would prefer to develop a KrF laser, because it is the newer technology, and one in which Europe already has some expertise. But he admits that it is a large step up to a 100-kJ laser. Given the uncertainties, the working group recommended building two intermediate facilities: a 10-kJ KrF laser and a 30-kJ Nd-glass facility. This would allow physicists to test the performance of the two technologies before making a final decision.

Building a 30-kJ Nd-glass laser would give European physicists access to a respectably-high-energy laser as a stop-gap until the larger laser is built. But this may prove unattractive to the five funding agencies on grounds of cost — the laser project will consume up to £25 million a year for ten years. A cost-cutting opportunity has been provided by France, which has offered use of its 20-kJ Phebus Nd-glass laser, sited south of Paris, for comparison with a new KrF facility.

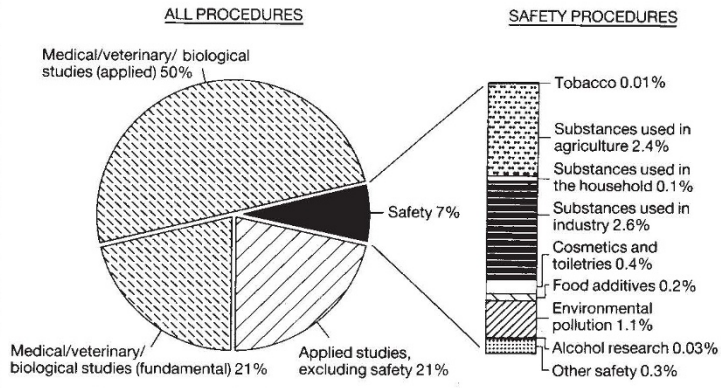
The funding agencies will make a statement on the working group's proposals later this year. Witkowski says a year's design work is needed for the 10-kJ KrF laser, and it would be a further four years before the facility is completed. The 100-kJ laser could be completed on a similar timescale.

Choice of a site for the intermediate KrF laser will wait until funding is agreed, but SERC's Rutherford Appleton Laboratory — where a research team led by Michael Key leads Europe in KrF technology — will be a front runner.

US and Japanese physicists also plan to upgrade their ultraviolet lasers. US physicists are similarly wavering between Nd-glass and KrF technology. One option is to upgrade the Nova Nd-glass lasers at the Lawrence Livermore Laboratories, but the Los Alamos team is also seeking funds for a large KrF laser. Japan is proposing an upgrade of the Gekko Nd-glass laser at Osaka University. **Peter Aldhous**

Trend towards fewer animal tests continues

FOR the thirteenth year in succession, the number of scientific procedures using living animals in the United Kingdom has fallen, to 3·3 million in 1989, about five per cent fewer than in 1988. Contrary to popular opinion, cosmetics testing accounted for only 0·4 per cent of the total, with safety testing of other substances (mostly those used in industry or agriculture) making up another 6·7 per cent, according to figures released by the UK Home Office.



Most licensed procedures (71 per cent) in 1989 were "studies to further medical, veterinary, dental or other biological research", the Home Office says. The applied studies which accounted for 50 per cent of all procedures were dominated by drug development and testing.

Over 60 per cent of procedures in 1989 were carried out in commercial laboratories (mostly pharmaceutical companies) with universities (including medical schools) accounting for another 23 per cent. Smaller numbers of procedures took place in hospitals, polytechnics and government laboratories. Laboratory rodents were used as experimental subjects in 85 per cent of licensed procedures in 1989. **P.A.**