as General Esmat Ezz of Egypt said, that the big countries get to keep their weapons of mass destruction while the poor are denied theirs. However, as Iraq has demonstrated in the Persian Gulf war, the "deterrent" stocks of chemicals in the Third World may have a different fate than nuclear deterrents: they may be used.

France has seized on this problem to promote its own, possibly self-serving idea for a two-tiered approach to weapons disposal. In this plan, the superpowers would phase out chemical stocks as rapidly as feasible over 10 years, but lesser signatories to the treaty would be allowed to keep "minimal security stocks" for 10 years. This would leave some chemical weapons in Western Europe (France) as a deterrent to the Soviets, whose large armory would be depleted slowly. And, according to the spokesman for France, Jean Desazars de Montgailhard, this approach avoids the unfair tactic of "disarming the disarmed" in the Third World. There is also an unstated concern that the removal of intermediate range nuclear missiles from Europe, now under discussion, could make chemicals more important.

Although the United States and the Soviet Union seem to respect France's concern about maintaining a deterrent, they do not have the same respect for another part of the proposal—a clause that would permit France or others to "modernize" chemical weapons during the phasedown. This loophole would let countries with no chemical warfare capability acquire it.

Jozef Goldblat of the Stockholm International Peace Research Institute commented that this amounts to "arming in order to disarm." Others said they had trouble following the logic of a program that called for disclosing all weapons stocks and at the same time permitting some to be kept as secret "security stocks."

Desazars argues that there are 12 or 15 ambivalent nations that would not sign a restrictive treaty but might be induced to join the French plan. A treaty among just a few big nations, France believes, would be hardly worth the effort.

The objections raised by France are probably remediable, according to U.S. and Soviet officials. But mundane obstacles that are now getting attention may cause more trouble in the long run. Among those mentioned were:

■ *Scope.* At present the draft treaty does not cover herbicides or riot control agents. Herbicides, according to Julian Perry-Robinson of the University of Sussex in Britain, account for half the volume of all chemical agents ever used in war, the largest use having been by U.S. troops in Vietnam. If the treaty is to be serious, some argue, it should look to historical precedent and should include herbicides. The United States disagrees.

■ *Big business.* The chemical industry has kept its views fairly quiet until now. A spokesman at the Ottawa meeting said that U.S. and Canadian companies strongly support a treaty, but are concerned about inspections. The nightmare, one representative said, would be to have poorly trained inspectors roaming the plant for weeks and holding up the process while tests are made. They also worry about outsiders picking up company information and using it. The industry has begun meeting to define its requirements.

■ *Shady business.* No remedy seems available for the problem of the "desperate company" scenario, in which a hard-pressed firm in a remote area agrees to make illicit chemicals and ship them to some nation's secret stockpile. Nor is there a good way to control chemical traders, whose tangible assets, a Dutch expert said, may consist of a desk and telephone in Rotterdam.

■ *U.S. politics.* Elisa Harris of the British Royal United Services Institute of Defense Studies pointed out that provision must be made for inspection of U.S. nuclear weapons facilities, which are closed by law to foreigners. This may require amendment of the Atomic Energy Act, a possible sticking point.

■ *Cost and logistics.* Little research has been done on the seals, monitors, or the communications equipment required to enforce the treaty. Nor is it clear how the 400-person inspections and technical directorate would operate, or what it would cost.

These are some of the gritty issues that will keep negotiators occupied for at least another year. ■ **ELIOT MARSHALL**

Slowdown for French Fast Breeders?

France's state-run electric power utility, Electricité de France (EDF), has given its strongest warning yet that it will demand a significant cut in the country's support for the development of fast breeder nuclear reactors unless the costs of generating power from such reactors can be cut significantly.

At present, electricity produced by the experimental reactor Superphénix, which started operation at the beginning of this year, is twice as expensive as that produced by France's pressurized water reactors. In an interview with the newspaper *Le Monde*, Pierre Delaporte, the recently appointed chairman of EDF, said that this was "far from what had been hoped." He said emphatically that within the next 3 to 5 years, the cost of electricity produced by fast breeders must be reduced, "if not to the same level as [pressurized water reactors] at least very close to it."

If this was not achieved, Delaporte added, EDF would be forced to impose "a major revision" on its plans for fast breeders. "This would be a heart-breaking disappointment, since our world leadership in this field is a promise of victories in the future," he commented.

Delaporte's warning comes shortly after nuclear authorities in France, Britain, and West Germany announced that they are abandoning plans to construct one demonstration reactor in each of their three countries, and to concentrate for the time being on a single successor to Superphénix. The thorny question of where this will be located, however, remains bogged down in a deadlock between France and West Germany.

Delaporte's warning also coincided with the identification of a 6-inch crack in a sodium container as the source of a leak through which Superphénix has been losing 800 liters of liquid sodium a day since last April.

Officials at the reactor argue that, since the container is not part of the operating system of the reactor, but merely the temporary storage facility used for fuel rods when these are being removed from the reactor's core, it should be possible to maintain the reactor itself in operation while repairs to the container are being carried out.

Whether or not the government agrees to their suggestion (the reactor has been shut down for scheduled maintenance since early in the summer) the sodium leak, whose cause has not been identified, will not only be costly to repair, but has also raised questions about the safety of other, more critical, parts of the installation.

"The leak could not have come at a worse time for the French," one British nuclear engineer commented last week. He pointed out that the questions about economic viability of fast breeders with respect to pressurized water reactors is particularly acute in France because of the country's success in reducing the costs of the latter through the use of standard designs and bulk ordering. "In a way, France's problem with fast breeders is a result of the success of the rest of its nuclear power program," he said. ■

DAVID DICKSON