

safeguarding of plutonium stocks is a vital issue.

There are two other reasons why the study, commissioned by the US National Security Agency, is both necessary and timely. First, the break-up of the Soviet Union has created huge uncertainty about the disposition in the successor states not just of plutonium but of fissile material generally. Second, it is now only a year before the future of the Nuclear Non-Proliferation Treaty (NPT) has to be determined; the reputations of those engaged on the academy's study makes it likely that their document will have an important influence on the negotiations at Geneva. That, at least, must be the hope.

Several problems lie ahead, of which the most immediate is the prospect that something will have to be done with the fissile material taken out of nuclear warheads due for dismantling under the Start-I and Start-II arms control agreements, neither of which is yet in effect. Weapons-grade uranium (enriched to 90 per cent or more in ^{235}U), is no great problem, the committee says; simply dilute it with ^{238}U and use it as reactor fuel. That is the spirit in which the United States has offered to buy fissile uranium from Russian warheads, selling it on to reactor operators as opportunities arise. It is as well to remember that even this solution requires that the successor states, and especially the Ukraine, should continue to comply with the agreements they have made. But there is at least a chance of that.

Plutonium is a much more serious problem, partly because civil reactors are likely to be producing more than 50 tonnes of it a year for the remainder of this decade, and also because there is no easy way of disposing of it. Some reactor operators in Europe and Japan are using plutonium and uranium oxides mixed together in so-called 'MOX' fuel, but the cost is higher (because of the extra radiological and security safeguards needed for plutonium). That, no doubt, is why the United States has not, or not yet, offered to take Russia's excess plutonium off its hands. (It is interesting, but a little depressing, that the committee reckons that regulatory approval for steps of this kind will be hard to come by in the United States.) It is also relevant that France, Japan and Russia have set their hearts on developing a viable fast reactor. But what else is to be done?

The committee argues cogently for a bilateral agreement between the United States and Russia in the first instance, and then for the engagement of the International Atomic Energy Agency (IAEA) in an international effort for the systematic storage and safeguarding of plutonium stocks. It probably makes good sense to see whether a practical arrangement can be worked out between the two governments likely to be the chief sources of excess plutonium in the immediate future.

But bilateral agreements, even if decked out with arrangements for mutual inspection at will, cannot readily be generalized to the multilateral arrangements there will eventually have to be to cover the diversity of plutonium producers a century from now. Why not go the whole way and transfer legal ownership of plutonium and the physical management of stocks thereof to the IAEA, with the understanding that this dangerous material would be released to its

original owners only when there is proof that it will be used in an approved fashion, perhaps as reactor fuel? The NPT is in need of what Mr Mikhail Gorbachev used to call "new thinking"; an international system of bonded warehouses for plutonium might be just what is needed. □

Agenda for EU research

Britain's House of Lords has a succinct comment on how Brussels runs research.

ONE of the few elements of continuity in the administration of British science and technology is the House of Lords Select Committee on Science and Technology, which from time to time answers Lenin's question "What then should be done?" in an appropriately magisterial way. Its best-known pronouncement is its plea in 1981 for a science minister, now granted after a decade's delay. Last November, the committee interviewed the Commissioner for Research at Brussels, Professor Antonio Ruberti, about the European Union's research programme. Its reflections on the meeting were published earlier this week as a transcript of the conversation and a letter to Mr William Waldegrave. The committee could do worse than sink its teeth into the issues that arose last November.

First, there is the question of rigidity. The standard way of working at Brussels is to struggle for a five-year research programme (called a "framework" programme) and then to spend the money (four per cent of Europe's total research budget) on predesignated schemes. But is not a programme set in concrete so far ahead almost certain to be ill-matched to the need? What the committee learned is what outsiders have always known, that there is little room for flexibility. More disturbing, the administration of the budget is likely to be more and not less rigid as a consequence of the Maastricht Treaty, which requires that all European institutions (including the parliament) should concur on spending plans.

Second, there is a matter of transparency. How is the framework budget constructed? Plainly, and properly, the Select Committee took fright at Ruberti's references to "considerations of continuity" as well as to "pressures from industrial and scientific concerns" among the influences moulding the research budget, and says in its letter to Waldegrave that it would like to see more openness in the determination of what Brussels wants to spend. It could have gone further and asked for an annual report on the EU's research programme and even for an annual budget cycle.

Finally, there is the question of what kinds of projects the EU should be supporting. The Select Committee urged on Ruberti the notion that the EU should be supporting projects intrinsically too large for member states, which would have the advantage of conformity with the principle of subsidiarity (that Brussels should do what member states individually cannot). The case for following such a course is intellectually irresistible, while Brussels is now better placed than for a decade to pursue it. That way, it would make even better use of its four per cent, and win friends as well. □