of pre-publication review in selected areas of research.

Despite several meetings with government agencies held over the past year, university officials report little indication that the government is prepared to relax its restrictions, in view of the prevailing political climate in Washington.

Last Friday, the State Department said that Stanford University would not be included in Dr Umnov's visit since it had refused to recognize the department's restrictions on what he should be allowed to do. Scientists at the University of Wisconsin also said they were withdrawing their offer to host a visit from Dr Umnov in the light of the department's actions.

The Soviet scientist's trip will still include one week at Auburn University in Alabama, and "two or three days" at Ohio State University. Professor Robert McGhee of Ohio State has said that, although Dr Umnov was originally to spend six weeks at the university, he was only prepared to accept the State Department restrictions for the shorter length of time.

David Dickson

Polish academics

More pressure

There are unconfirmed reports from Poland that Dr Henryk Samsonowicz, rector of the University of Warsaw, has been dismissed for refusing to accept the new rules for the conduct of institutions of higher education laid down by the ruling Military Council for National Salvation. Earlier, Dr Samsonowicz was reported to have been among the many academics interned under martial law regulations, while other reports indicate that he has been expelled from the Communist Party.

According to Mr Artur Swiergiel, a member of the Mazowsze (Warsaw and home counties) regional executive of Solidarity, who is at present working on animal nutrition in Cambridge (England), the reported dismissal is only the tip of the iceberg. He expects a wave of dismissals among the university rectors elected in the past 18 months according to the new democratic procedures, but predicts that the expected purge will be far more sharply felt among junior academics and research students, as it was in 1968. He stresses that Western scientists who wish to campaign on behalf of their Polish colleagues should not concentrate only on the most eminent. Current lists include Dr Grzegorz Bialkowski, vice-president of the Polish Physical Society, and Dr Antoni Stawikowski, vice-president of the Polish Astronomical Society, but also their junior colleagues.

So far, Western scientists who have approached their local Polish consulates or embassies with requests for further information about interned colleagues have been met with suggestions that if the scientist in question could arrange a job

for his colleague in some university or laboratory outside Poland, the authorities would be quite willing to grant an exit visa.

Such an arrangement, Mr Swiergiel stresses, should not be accepted unless there is clear evidence that the scholar concerned definitely wishes to leave Poland, since the army newspaper *Zolnierz Wolnosci* has indicated that Solidarity would have to shed "35,000 intellectual advisers" before it could be allowed to resume "purely trade union" activities. This theme has been reiterated by Stanislaw Ciosek, the Minister for Trade Union Affairs, in a recent meeting with "representative workers" from Lodz, who stressed that trade unionism in Poland must return to its "class basis".

Under martial law, scientific exchanges between Poland and the rest of the world have come to a halt. In London, the Royal Society has no news of Wieslaw Stanczyk, who was expected to arrive in January to take up an exchange scholarship. From Finland it is reported that exchange fellows due in early December failed to arrive, although martial law was not declared until a few days after their expected arrival.

Scientific exchanges are based on two types of agreement — the purely academic negotiated with the Royal Society or British Academy and those which form part of the bilateral agreement on trade and technology. The financial mainstays of the latter are the various economic agreements negotiated over the past decade. These include a licensing agreement between Massey-Ferguson tractors in the United Kingdom and the Ursus motor works in the suburbs of Warsaw. In one of the latest moves in "solidarity with Solidarity", workers at the British plant have voted to "black" all spare parts and components from Ursus until martial law is lifted.

Vera Rich

UK nuclear power

At last, a plan

At long last the British nuclear industry has a timetable that can be believed in. The "wide-ranging" public inquiry into the design and siting of a pressurized water reactor (PWR) at Sizewell in Suffolk will begin in January 1982. The "task force" set up under Dr Walter Marshall, chairman of the United Kingdom Atomic Energy Authority, to speed up the design of the PWR last week reported that its pre-construction safety report was complete and in the hands of the customer for the reactor, the Central Electricity Generating Board. This is in line with the timetable set by Marshall last July, as is the date set by the board for the publication of its full safety review — the end of April.

The only fly in the ointment seems to be the Nuclear Installations Inspectorate, whose lack of inspectors appears to be putting back the publication of its own, independent safety report. The inspectors

will now produce a summary review of the generating board's own safety documents in June this year, expressing their reservations (if any), but may produce nothing further before the public inquiry. The inspectorate's safety assessment is "an iterative process" says the chief inspector, Mr Ron Anthony. There can be no particular point at which it is best to hold a public inquiry: too early, and the inspectorate would have too little time to study the design; too late and it would not be possible to take the inquiry's findings into account without disrupting the project.

The task force report will not be published, but Dr Marshall last week outlined its main features. His study concentrated on the safety standards and the systems demanded by both the inspectors and the electricity board which — before the task force was set up in July last year — were estimated to imply that the British PWR would cost 50 per cent more than the American Westinghouse/Bechtel Corporation system. Marshall estimates that the extra cost will now be only 20 per cent. A quarter of that is attributable to measures intended to minimize loss-of-coolant accidents, a quarter to reduce the radiation exposure of workers and the remaining half to the use of two rather than one turbine for converting steam power into electricity.

The emergency core cooling systems will contain four separate high-pressure pumps (twice as many as in French and American PWRs) each feeding one of the four primary coolant loops and backed up by diesel generators; and the outer containment will be a four-foot thick concrete and steel shell, not the double wall originally planned. Radiation levels have influenced the British design because the electricity generating board is anxious that exposure at its projected plant should not exceed that at its existing nine plants. Thus the task force has attempted to reduce exposure by providing more space within the containment building (150 feet in diameter compared with 140 feet) and by the use of remote maintenance equipment.

The board thus hopes to bring individual operating exposures down to the level of the 0.25 rem per year or so experienced in the old Magnox plants. The key factors seem to be good chemical management of the plant, particularly of the primary coolant water, and efficient and fast maintenance procedures. Thus the emphasis is now less on the design (the original version of which called for nearly twice as much concrete shielding as the American baseline) than on the efficient operation of the reactor.

The eventual cost will be within the target Marshall set himself six months ago — no more than 70 per cent of the cost of an advanced gas-cooled reactor. At 1981 prices, this works out at about £1,000 million for 1,200 MW. Nevertheless, this is some four times the price of a PWR as estimated by the French, and the National

Nuclear Corporation (which would build the reactor) and the Central Electricity Generating Board (which would buy it) are now putting their heads together to see how the French do it — and whether the British price might be brought down. The generating board intends to announce its final estimate of the cost of the station, and the price of the electricity that it will produce, at the end of February.

Robert Walgate

Interferon used at last

The Medical Research Council's Common Cold Unit in Salisbury, England, has resumed its trials of interferon as a preventative of rhinovirus infection — one of the causes of the common cold.

Ten years ago, the centre proved the effectiveness of leukocyte interferon, prepared from human blood by Dr Kari Cantell in Finland, against rhinovirus — but abandoned further work because of the high cost of the material. Trials have been resumed in the belief that genetically engineered interferon will

"TAKE THREE TIMES A YEAR,
AFTER WAGE
INCREASES"

eventually be so cheap that interferon might one day be used to prevent coughs and sniffles.

The resumed trials utilize interferon which is much purer than before. It is obtained either from white blood cells or from genetically engineered bacteria. Both forms are effective at high dosage and the next step at Salisbury will be to test how far the dosage of interferon can be reduced and how late in the course of infection it can be administered. Then it will be up to the manufacturers to reduce prices to the level of common palliatives such as aspirin — a tall order, no doubt, but one which may eventually be met. The aim is to do better than the Soviets who currently sell, for about \$1 a time, interferon of such low dosage as to be useless.

Robert Walgate

US research spending

Problems in public

Washington

Efforts by the Reagan Administration to shift significant responsibility for research from the public to the private sector have produced a new crisis of identity in some national laboratories funded by the US Department of Energy.

Established in the early 1950s largely as a means of supporting the research needed for both the military and the civilian uses of nuclear energy, the laboratories expanded the scope of their activities considerably in the 1970s as they were given additional responsibilities.

Many of the areas of expansion, however, such as solar energy and conservation, are precisely those whose research budget is being most heavily cut by the Reagan Administration. Furthermore, some powerful Republicans are questioning whether it is appropriate for the government to be involved at all in areas which, they claim, should properly be left to the private sector.

Budget figures alone tell a significant part of the story. For the twelve "multi-programme" laboratories run by independent contractors for the Department of Energy, the total budget for the current fiscal year is \$2,803 million, \$60 million less than for 1981.

Given an expected inflation rate of about 10 per cent, the result will be a significant reduction in overall effort. The reductions, however, will not be shared equally, with the two major weapons laboratories, Los Alamos National Laboratory and the Lawrence Livermore National Laboratory, receiving budget increases of 11 per cent and 16 per cent respectively.

Laboratories hit harder by cuts include Argonne National Laboratory near Chicago, with a budget reduction of more than 25 per cent, while a reduction of similar magnitude has been absorbed at Oak Ridge National Laboratory, Tennessee. In both instances, the major decreases are in programmes of research into fossil energy, conservation technologies and "other energy supplies".

A decision last year by the Department of Energy, in light of its expected budget cuts, to decrease the energy-related programmes by 10 per cent from 1980 levels, has already markedly affected staffing. Some laboratories have been able to absorb most of the technical and scientific staff who have been displaced in weapons-related projects; at Oak Ridge, for example, many have moved to nuclear-warhead production. Others have not been so lucky. Brookhaven National Laboratory in Long Island has already had to lay off 270 out of its total of 3,600 staff. At Argonne, the reduction so far has been 600 out of about 4,400.

The prospects for next year do not look much better. Although precise budget

proposals will not be known until they are presented to Congress by President Reagan on 8 February, it is widely expected that the Administration will suggest similar reductions for 1983; after that, the laboratories can expect level funding at best for the next three to five years.

A significant change in policy direction was already indicated in a memorandum last May to laboratory directors from Acting Under-Secretary of Energy, Dr Raymond Romatowski. Under this regime, Dr Romatowski said that in principle the multi-programme laboratories should be restricted to two main functions. The first was to conduct basic and applied research comprising important "technology-base" activities that the private sector is ill-equipped or not motivated to pursue; the second was to undertake development work in promising areas "beyond the private sector's capability and interest".

Several review committees are now looking at how to put these two principles into practice. The main review, being carried out by the Office of Science and Technology Policy, will take some time to complete. In the shorter term, a panel of the Department of Energy's Energy Research Advisory Board has been asked by the Deputy Energy Secretary, Mr W. Kenneth Davis, to carry out its own review of the multi-programme laboratories, and a final report is due by September.

Meeting in Washington last week, the members of the advisory board panel agreed to offer various strategies as possible options for action in their interim report, due at the beginning of March.

In the course of preparing its full report, the panel will be looking at the experience of other countries in running government laboratories to see if they may provide a model for new institutional arrangements in the United States.

Whatever proposals are finally accepted by the Administration, attempts significantly to change the current status of the laboratories is guaranteed to meet an uphill struggle in Congress, where many have powerful political supporters.

David Dickson

EEC research and development

Time for success

Brussels

Vicomte Etienne Davignon, European Commissioner for Research and Development in Brussels, set alight a rather quiet meeting on the evaluation of Community research and development on Monday with a sharp attack on previous Community policies. There is a "great deal of scepticism" about Brussels-sponsored research and development, he said, and it was time for some successes.

Davignon singled out the seven-year gestation of the bioengineering programme, recently agreed at the Council of Ministers, as an example. "We came out