

is involved has, however, recently been confirmed by Romeo (Bologna), working with records of dispensations for cousin-cousin marriages accumulated at the Vatican. Among Caucasian populations, the frequency of carriers of defective genes is thought to be 1 in 20. The Vatican records have confirmed that cystic fibrosis is an autosomal recessive disease, accounting for the normal incidence in Northern Europe of 1 in 1,600.

Attempts at antenatal diagnosis of cystic fibrosis have been based on the virtual absence, in those with the overt disease, of an uncharacterized proteolytic enzyme. This technique, originally developed by Dr Henry Nadler in Chicago, is now being taken up at other centres. It may eventually be possible to offer amniocentesis to pregnant women who have already produced one child with cystic fibrosis, although the frequency of false positives and false negatives has not yet been determined confidently.

Two techniques for the recognition of carriers are being developed, one of which is based on the occurrence in the serum of both homozygotes and carriers of a protein apparently characteristic of cystic fibrosis. Last year, Dr David Brock's group at the Department of Human Genetics at the University of Edinburgh reported the raising of antibodies against the protein (Manson, Jean and Brock, David J.H., *The Lancet*, 16 February 1980) and the possibility that these might be used to distinguish between cystic fibrosis patients (carrying a full dose of the protein), carriers (with a smaller amount) and normal people. Since then, better techniques for raising antibodies have been developed, and there are plans for the development of monoclonal antibodies. The second technique, developed in Los Angeles, is based on the differential response of cystic fibrosis patients, carriers and normal people to the administration of the drug ouabain.

The hope now is that a relatively straightforward way of recognizing carriers may reduce to manageable proportions the provision of amniocentesis for mothers at risk of producing children with cystic fibrosis. In Britain, the Department of Health is under some pressure to prepare for a pilot scheme against the time when the diagnostic techniques are fully developed.

Genetic screening may well be possible before the nature of the underlying defect is understood. One possibility is that the protein characteristic of cystic fibrosis is in normal people removed by the proteolytic enzyme which is the basis of proposed diagnosis of the disease by amniocentesis. In Britain, Professor R. Williamson (St Mary's Hospital Medical School) has embarked on a programme for the identification of the cystic fibrosis gene using techniques of chromosome sorting and genetic manipulation.

Financial support for most of the British research in this field is provided by the

Cystic Fibrosis Research Trust, which is now spending more than £500,000 a year. It is a sore point with those involved that the Medical Research Council's contribution to work in the field, although small, was exaggerated in a reply to a parliamentary question last October.

Safety at Windscale

Yes we were wrong

The British nuclear industry's site at Windscale, the source of a long sequence of mishaps in the past decade, was last week given an adverse report by the Health and Safety Executive, the organization in charge of the Nuclear Installations Inspectorate. And British Nuclear Fuels Limited, the owner and operator of the site at Windscale, put its hand on its heart and acknowledged that it had been at fault.

The report by the Health and Safety Executive is largely concerned with managerial failures at Windscale. It says that British Nuclear Fuels had allowed the condition of the several plants at Windscale to deteriorate until by the early 1970s, their safety could not be assured; and that the efforts made since 1974 to enhance the safety of the Windscale facilities further complicated the assurance of safety by their demand on resources. The report complains that the company paid too little attention to the filling of senior posts at Windscale and that the arrangement whereby the Northwest Area General Manager is responsible for safety in the whole of Windscale but also at other plants means that his responsibilities are too much diluted.

The report says that most incidents at Windscale have arisen because of mistakes in the execution of routine tasks. About a quarter of the 30 or so incidents reported each year since 1976 have involved the exposure of people to doses of radiation exceeding the limits laid down. The inspectors say that the managers of the plant must provide workers on the site with regularly updated and more explicit instructions for carrying out routine tasks and that a promised review of safety procedures should be completed more quickly than now seems likely. In the long run, the Nuclear Installations Inspectorate wants to see a system for the independent audit of safety at Windscale.

The effect of the Health and Safety Executive's report on the publicly owned parts of the British nuclear enterprise is likely to be far-reaching. British nuclear engineers appear to acknowledge that Windscale, because of the way in which it has been created by the addition of new plants to an already overcrowded site, and because of its relative antiquity, is not the ideal model for the safe operation of nuclear plants. But other nuclear sites are likely to encounter similar problems which will be less readily excused.

US university regulations

Complaints listed

Washington

Jumping on the anti-regulation bandwagon which helped propel Mr Ronald Reagan into the White House last November, US colleges and universities are eagerly compiling a list of federal regulations which they feel are stifling the productivity of their educational and research efforts.

One regulation that the universities have in mind is the notorious Circular A-21, issued by the Office of Management and Budget, laying down strict accounting rules which must be obeyed by any scientist and his or her institution receiving federal research support. "A-21 is at the top of our priority list for reform", Mr Sheldon Steinbach, general counsel of the American Council on Education, said last week.

Another rule which the universities would like to see changed is the requirement that scientists should provide a precise account of the way that their time is divided, not only between teaching and research, but also between different research projects. Another relates to cost-sharing between universities. And although the Carter Administration, in its last month in office, took steps through the Office of Management and Budget and the Office of Science and Technology Policy to reduce the impact of the A-21 rules, many universities feel that they are still far from satisfactory.

The universities' point of view had already been presented to Vice-President George Bush, who has been appointed by President Reagan to head a task force on regulatory reform, and has announced the Administration's intention to defer several new regulations proposed by Mr Carter, and also to take a close look at several existing rules to see if they should be revised.

Last week, Mr Bush was presented with a nine-point plan to streamline federal rule-making which had been drafted by 62 leading businessmen and educators organized by the American Council on Education into a Business Higher Education Forum. The forum's statement linked together the complaints made by the business community about, for example, the impact of health and safety regulations, and those coming from the academic community about the general burdens of educational regulation.

The report of the forum says that, as a result of the many educational reforms introduced over the past twenty years, from rules about facilities for handicapped students to affirmative action programmes, regulation of higher education "has mushroomed", with 400 laws on the statute book overseen by 34 committees of Congress.

One complaint is the economic impact of the regulations. According to Howard Bowen, an economics professor at the