

Environmental Aspects of FMD

In December 2001, after FMD was eradicated, the Environment Agency published its initial analysis of the impact of FMD on the environment of England and Wales. This indicated that the environmental effects of the disease and the eradication procedures had been quite small and of short duration. Overall there were no significant problems. We were therefore reassured during the Inquiry when the Northern Area of the North West Region of the Agency also told us that 'To date our monitoring of the environment has revealed very few persistent pollution problems have been caused nationally, and none in Cumbria'.

Nonetheless, the control and eradication of FMD did raise a number of environmental issues in Cumbria and took environmental regulation and enforcement into some relatively uncharted areas of operation. We have therefore focussed on how FMD was handled and on the problems that arose. For a technical consideration of the general environmental impact of FMD we recommend the report of the Environment Agency¹⁰¹.

ENVIRONMENTAL REGULATION AND ENFORCEMENT

The Environment Agency is the main regulator of environmental pollution in England and Wales and is empowered with a wide range of responsibilities under statute. Briefly, it has responsibilities for:

- *water quality, resources and pollution incidents* in respect of rivers, estuarine waters, coastal waters and groundwater;
- *land* in respect of waste management and providing advice to Local Authorities on contaminated land;
- *air* in respect of authorisation of emissions from industrial plants and air quality monitoring programmes.

However, there are several areas of environmental consideration that arise in relation to FMD where the Environment Agency is not the statutory lead body (Table 12).

It should be noted that the Agency has responsibilities for prevention of groundwater contamination from burials of carcasses or ash from pyres. These actions require authorisation under the Groundwater Regulations 1998 and are also subject to the Animal Byproducts Act, which is regulated by DEFRA and controls disposal of animal waste not intended for human consumption¹⁰². The Environment Agency is also responsible for waste disposal, excepting wastes from agricultural sources, which are exempt from the normal waste management regimes.

Table 12. Areas of environmental considerations that relate to FMD and the lead body responsible.

Area of consideration	Lead body
Government policy and legislation	DEFRA or DoH depending on subject
Environmental health, including air pollution, statutory nuisances e.g. smoke, smell, noise problems	Mainly Local Authority except for major industrial sites where EA regulates emissions to the air
Granting planning permission	Local Planning Authority
Contaminated land	Mainly Local Authority but for some sites EA may take a lead role
Supply of public drinking water	Local Water Company (United Utilities)
Drinking Water Quality	Drinking Water Inspectorate (for public supplies)
Monitoring quality of private drinking water supplies	Local Authority
Sites of Special Scientific Interest and Nature Reserves	English Nature
National Parks	Lake District National Park and Yorkshire Dales National Park Authorities
Access to the countryside	Local Authority
Public health and consumer interests in relation to food	Food Standards Agency

The Agency is not responsible for matters of local air quality control such as those that relate to the burning of carcasses on pyres. This is the responsibility of the Local Authority through

its Environmental Health Department. It is regulated under the Clean Air Act 1993 but the Clean Air (Emission of Dark Smoke) Exemption Regulations 1969 allow animal carcasses to be burned if there is no other practical method of disposal. The statutory nuisance provisions of the Environmental Protection Act 1990 also apply, but from the air pollution standpoint there is no statutory requirement for a prior authorisation of a pyre. Finally, we should say that Public Health aspects of environmental pollution fall under the remit of the Public Health Departments of Health Authorities. The Director of Public Health Medicine, of North Cumbria Health Authority, Dr Peter Tiplady presented evidence to us which is relevant here and to which we will also refer later when considering health and community matters.

ORGANISATION AND COMMUNICATION

From the very early stage of the FMD epidemic the Environment Agency's response was guided by its own National Foot and Mouth Task Force Group. This was responsible for co-ordinating functions within the Agency and for formulating the national policies adopted. The Group was represented at the JCC in Page Street, where policy and operational issues were considered with DEFRA, DoH and others. The Agency's incident management procedure involved a direct line of communication from COBR through a National Controller in London, to a Regional Controller for the North West, to an Area Controller in Penrith. Thus, in a way, the Agency's model broadly paralleled that adopted by DEFRA.

When the first FMD case occurred in Cumbria the Agency immediately established a dedicated team of officers to deal with the disease; at the height of the epidemic this team was 70 strong. From the outset the Environment Agency offered its support to DEFRA at Rosehill. However, we were told that communications were 'difficult' until some weeks into the epidemic when the Disease and Emergency Control Centre was established, which helped 'to establish rapport' and demonstrate how the Agency could add value to managing the crisis.

The Local Authority Environmental Health Departments began to engage with the problems of FMD in early March but found it very difficult to establish communication with the major agencies and to arrange for data sharing. At that time the Chartered Institute of Environmental Health wrote to the Minister of Agriculture expressing concern that Environmental Health Officers were being excluded from exercising their proper role in making risk assessments on matters of environmental health. Later the situation improved and information began to be shared more widely. However, even well into April, collaboration on the monitoring of air quality was not as close as we would have expected.

A somewhat corresponding picture emerged in our evidence from the Director of Public Health Medicine, who had found great difficulty in the early stages of the epidemic in engaging with the statutory authorities. By the later part of March he was so concerned about the lack of public health involvement in carcass disposal problems that he wrote to the Chief Medical Officer seeking urgent advice. However, in early April things improved and the Public Health Department began to become involved and to be consulted regularly about the location of individual pyres.

ENVIRONMENTAL CONCERNS

The main areas of environmental concern which were brought to our attention during the course of investigations related to:

- burial or landfill disposal of carcasses;
- pyres; and
- disposal of farm waste.

The Environment Agency commented that there had been good control over disinfectant disposal, that no long-term impacts had been observed on surface water or groundwater. It also considered that, on balance, the residual adverse effects of FMD on biodiversity were likely to be small.

In contrast, we recorded the concern about biodiversity in the Action Plan *Sustainable Landscapes for Cumbria*¹⁰³ submitted in evidence by the Landscape Regeneration Team of the Cumbria FMD Task Force. This document recognised that much of the area of Cumbria had been conditioned by Man's intervention and that recent years had seen a decline in habitat quality and diversity and some damage to and dereliction of the landscape. Moreover, there was a perceived risk that this process might accelerate in areas where the economics of agriculture were poor and FMD had exerted an adverse impact on farm viability¹⁰⁴. The Landscape Regeneration Team's 'solution' was to seek opportunity in adversity, and to propose a major shift to environmentally supportive land management strategies focused on the distinctive landscape characteristics of different areas of the County. Fundamental to this is the restructuring of support payments to farming and the attraction of additional funding through the RAZ programme. These are discussed in Part 4 of this report.

Carcass Disposal: Overview

Despite the preferred hierarchy of disposal methods, logistical and transport constraints in the early phase of the epidemic resulted in most carcass disposals taking place on farm. Later as landfill capacity was made available it was brought into use alongside the development of the mass burial site at Great Orton. By the later stages of the epidemic, when there was a flare up of FMD in the 'Penrith Spur', the available rendering capacity was greater and most of the animals were disposed of in that way.

On Farm Burial

On farm burial (and also the burial of pyre ash) was subject to a prior risk assessment under the Groundwater Regulations 1998. This took account of:

- groundwater vulnerability e.g. likely presence of clay or other suitable covering material to prevent groundwater pollution;
- proximity to surface water;
- proximity of any known surface or groundwater abstractions in the area;
- proximity to conservation interests and ancient monuments.

Where necessary, English Nature was consulted on nature conservation matters. Information on private and public water supplies was made available by the Local Authorities and included as part of the Environment Agency assessment. The site was investigated by digging trial pits and also was subject to the Good Water Code, which stipulates required minimum distances from streams, springs, boreholes and field drains.

According to the Environment Agency, farm burial was used on 49 farms in Cumbria and following the lifting of FMD access restrictions these sites were visited by Agency and DEFRA to confirm the risk assessment that had been made. Under the terms of the Groundwater Regulations 1998 there is a need for an ongoing monitoring programme, which we were informed could be required for up to 20 years. A specific point of note is that in the early period before SEAC issued its risk advice on BSE, some animals born before 1 August 1996 were buried. We were informed that, where necessary, a further risk assessment is being undertaken to determine if any further action is required.

Landfill

Four landfill sites were used for the disposal of wastes associated with FMD. Hespian Wood landfill accepted carcasses, pyre ash and small quantities of blood from the Carlisle abattoir. Flusco Pike landfill accepted only carcasses and Distington landfill received animal carcasses and leachate¹⁰⁵. Lillyhall landfill¹⁰⁶ accepted pyre ash and leachate from a mass burial site in South West Scotland and small amounts of contaminated materials such as clothing. The first deposits of carcasses in landfill started at the end of March and pyre ash and leachate deposits are still taking place.

According to the Environment Agency the operational procedures at these sites had ensured that 'no specific pollution' had been caused by the acceptance of FMD material and the risk of FMD spread through leachate has been controlled through alkaline treatment. However, the Agency acknowledged that both the FMD materials themselves and the excavation of the pits caused substantial smell nuisance and there had been around 350 complaints. We also learned from the Environmental Health Department of the problem of smells from the landfills.

Amongst the community we found continued resentment that residents had not been consulted before the landfills had been brought into use and about the degree to which smells from the sites affected their daily lives. There were also concerns over 'health hazards'. It was felt strongly that it had been wrong to bring 'contaminated material' into the area at a time when the farms in the area were free from FMD; and the wisdom of bringing leachate from Scotland to Cumbria was questioned.

Mass Burial

The largest single burial site in the UK is at Watchtree near Great Orton. It was constructed and used at the height of the epidemic as a means of clearing the backlog of carcasses and creating the capacity for the contiguous cull. The site was authorised by the Environment Agency under the Groundwater Regulations 1998 subject to specified conditions. These related to its construction and to the environmental records that must be submitted for environmental monitoring purposes. The facility is designed on a containment principle using the hydrogeology of the site and a system of barriers and drains to safeguard against seepage of effluent.

Watchtree is owned and operated by DEFRA through contractors, but the Environment Agency has had a continuous involvement with the site. It was in attendance during its construction and use in carcass disposal and has a continued monitoring role. The original authorisation was for 500,000 carcasses and when the disposal was brought to a close on 7 May 2001 466,312 carcasses had been received. Of these 96% were sheep, of which two thirds were slaughtered on site. The site also received 12,085 cattle but was prohibited from accepting cattle born before 1 August 1996.

From its inception Watchtree was a highly contentious project. Now the burial pits are capped and landscape restoration work is under way it has the air of a large industrial facility with very little odour. But during its construction and use it brought great disruption and distress to the local communities, including the village of Great Orton. Large numbers of heavy lorries and the pervasive smell from the site were major problems until late 2001. Since the site is government owned it did not require normal local planning approval, and there was little if any pre-consultation. We understand that the facility may be unique in that it will be controlled under the Groundwater Regulations 1998 rather than licensed as a waste disposal facility. There is some concern on the part of the Local Authority Environmental Health Department that this may present longer-term regulatory and enforcement issues.

We learned from the Environment Agency that the leachate from the site was initially tankered to Workington and discharged directly into the Irish Sea through a long outfall. Even accepting the scientific evidence that the procedure had very little environmental impact, we were pleased that it had been discontinued. The material is now processed through waste water treatment plants in Cumbria and elsewhere. According to the Agency there had been 'some minor localised pollution incidents' due to works on the site but these had been rapidly brought under control.

Community reaction to the facility has been almost universally negative. A Community Liaison Committee has been set up as a mechanism to keep those who live nearby informed of developments and to engage them in a long-term plan to restore the site as a nature reserve. However, the measures taken have only been partially successful and there is suspicion about the long-term proposals for the site, and particularly about the prospect of it being re-established for waste or carcass disposal. We were informed that no objection has been raised to DEFRA's retrospective planning 'Notice of Proposed Development under Crown Development Procedures' for the site, which may help to resolve some of the uncertainty about its long term future.

Pyres

During the disease eradication campaign in Cumbria 130 pyres were used in the destruction of animal carcasses. Typically they consisted of the carcasses, plus coal, railway sleepers, wooden pallets, straw bales and diesel oil. The size of the pyres varied with the number of carcasses to be destroyed but a medium size pyre might be approximately 400 tonnes and burn to leave approximately 60 tonnes of ash¹⁰⁷. Particularly when they burn slowly, pyres give off an acrid smoke containing particulate matter, sulphur dioxide, nitrogen dioxide and possibly other products of combustion such as dioxins, polyaromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).

As the number of pyres in Cumbria increased smoke became more and more apparent, particularly for communities close to pyre sites. The local Public Health Departments and the Environmental Health Departments sought to obtain information which could guide the siting of pyres and give a better insight into the effects of their emissions on air quality. At that stage no risk guidance was available from the DoH, despite it being requested. A pragmatic approach had to be taken based on the best information available, and it was determined that no pyre would be permitted within 0.5km of a community under any circumstances. Pyres within 1.5km would be accepted provided the weather forecast indicated the plume would be taken away from the community¹⁰⁸. However, even on that basis, through early April the Public Health Department rejected approximately 50% of the pyre sites proposed.

Matters came to a crisis point when there was a proposal for a mass burn site at Hallburn near Longtown. Public objection to this was very vigorously demonstrated at a public meeting on 12 April and the development of work on the pyre was suspended. Shortly afterwards on 16 April there was a further public protest at a proposed pyre site at Langrigg. At this stage the North Cumbria Health Authority decided it would make a case against pyres on public health grounds.

On 18 April the Health Authority requested MAFF to suspend further burns. With the exception of one pyre near Calbeck that was too far progressed to be stopped, pyres in Cumbria ceased, and the pyre at Langrigg was dismantled. Subsequently, on 24 April, a full risk assessment paper 'Effects on Health of Emissions from Pyres Used for the Disposal of Animals' was published jointly by DoH, DETR, Food Standards Agency, Environment Agency and AEA Technology. However, by then it was too late for Cumbria because the burning had stopped. On the 7 May the Government announced 'no pyres would be lit in England and Wales after this date'.

In the period after the epidemic it has been established that the degree of air pollution caused by emissions from pyres caused levels of particulate matter, sulphur dioxide, nitrogen oxides, PAHs, dioxins and PCBs within 2km of pyre sites to be raised above the rural background levels. Nonetheless, they were comparable with the levels typically found in industrial urban conurbations. Inhalation of these levels of substances was therefore considered by the DoH not to present a cause for concern. The Food Standards Agency was also able to confirm that dioxin and PCB levels in foods were, with very few exceptions, within the normal ranges, and that no significant harm was expected from food produced near pyres.

The advice contained in the joint risk assessment published on 24 April broadly supported the pragmatic approach that had been adopted in Cumbria, although there is no doubt that in the early stages of the FMD outbreak some pyres were built closer to communities than would subsequently have been recommended.

Farm Waste

Non-livestock materials on farms where animals had been slaughtered were necessarily disposed of as agricultural waste. This is not 'controlled waste' and therefore falls outwith the regulatory scope of the Environment Agency. We were told by farmers and others of apparent examples of what might be questionable practices in the handling and disposal of materials such as asbestos. We understand that DEFRA has no record of the amounts or locations of waste that was disposed in this way.

Environmental Impact of FMD

The evidence indicates that some of the difficulties encountered during the FMD epidemic related to the fact that the national agencies (DEFRA, Environmental Agency, and DoH) did not 'connect' with the local agencies, such as the local Environmental Health Department and the Public Health Medicine Department. As a result it was several weeks into the FMD crisis before effective working links were established. This is a problem that needs to be addressed, and it is probably best tackled at the local level.

We recommend that Cumbria County Council seek to establish a forum in which the public sector agencies covering environment and health would meet on an annual or more frequent basis. This would be designed to create closer links between the different service providers and to develop an integrated plan for Cumbria covering the areas in which the national and local bodies have responsibilities, including FMD contingency planning.

The way that landfill sites were brought into commission for dealing with carcass material and the Watchtree mass burial site was established, has left a legacy of resentment amongst the nearby local communities. We recognise what was done cannot be undone but we believe that the local residents have a right to expect that their interest should be taken into account. **We recommend that the operators of the Distington landfill and of the Watchtree mass burial site build on existing initiatives to ensure that complaints of smell or other environmental intrusions on the local community are fully addressed.**

Although we were content that the Watchtree is a well designed and well run facility its long-term future gave us significant cause for unease. Many local residents are of the view that the

facility has blighted their locality, and they are seeking reassurance over the future plans for the site. Our information from the Environment Agency is that the site will require to be monitored for at least 20 years, so we assume that at the end of the present 5-year management contract some further arrangement will be put in place. We understand that there is a proposal to develop the site as a nature reserve but DEFRA has not been able to confirm to the community that the site will not be brought into use at some stage in the future. In our view the continuing uncertainty over the future of the site is leading to suspicion and distrust, particularly given the circumstances of the site's creation. **We recommend that DEFRA states unequivocally the future plans for the Watchtree site, and particularly whether it is to be permanently closed for disposal of animal carcasses or other waste. Permanent closure would be the plan favoured by the local community and the Inquiry Panel endorses that view.**

We have concerns about the potential for stored up problems associated with some on-farm burials of non-livestock materials during the post-FMD cleansing on farms. **We recommend that the County Council, the Environmental Health Departments, Environment Agency and DEFRA jointly consider what might be done to map where materials are buried and where necessary to address any safety issues that may emerge.**

HEALTH

Anything that can be said about the effects of FMD on human health must necessarily be qualified by the reservation that the comments are made within the limits of the information available up to the present. In evidence we did not encounter any statistical analysis of health trends that may give an insight into the population effects of FMD. Moreover, at this stage we think it would be difficult to undertake a meaningful trend analysis. More may be revealed in a few years time.

On the basis of the evidence of the Director of Public Health Medicine, there had been no notable increase in enteric disease over the FMD period. However, as indicated by increased subscribing rates for medicines, there had been an increase in respiratory problems, which were assumed to relate to the smoke from the pyres. Generally, however, there does not appear to have been a significant increase in demand on the health services. On the basis of what we learned from the Public Health Departments, Environmental Health Departments or Environment Agency there were also no indications of problems of waterborne infections, although there was clearly concern over the risks that such problems could have arisen.

Our attention was drawn to the specific physical health problems that had been experienced by some individuals. We cannot make any enlightened comment on these cases other than to say that those affected attributed their conditions to their experiences during the FMD outbreak. We also express our best wishes for their early recovery to full health.

We did find evidence of what the Director of Public Health Medicine described as problems of 'emotional, social and mental health'. The situation was well expressed in his comment that some people 'had had too much to bear'. It may not be easy at this stage to quantify this form of health damage, although we suspect that a pattern may eventually emerge in the social health statistics. We can attest from our meetings and discussions that many people had gone through a period of enormous stress created by the circumstances in which they found themselves, and over which they had little control.

Some indication of the scale of this stress was provided in the evidence from Voluntary Action Cumbria, which, during the worse of the crisis, instigated a 24-hour helpline, manned by a team of 8 volunteers to meet the demand for support and assistance. The Citizens Advice Bureau (CAB) was able to provide us with some objective statistical indicators of the problems being experienced within the community. At their office in Wigton the recorded number of enquiries in 2001 was increased by 45% over the previous year. At the office in Eden the corresponding increase was 32% and at Carlisle (which also covers Longtown) it was 30%. These enquiries covered the full range of issues on which CAB provides advice, but we noted that 40% were related to debt, up from about 30% in the previous year.

To gain some further insight into the health problems that may occur the Institute of Health Research at Lancaster University has established a project on the *Health and Social Consequences of the 2001 Foot and Mouth Epidemic in North Cumbria*. Within the study group are included farmers and farm workers, small business operators, 'frontline' workers such as DEFRA staff and disease control personnel, members of the community and health professionals. Results after the first year of this project indicate that FMD has created a significant trauma affecting a range of occupations, and from which recovery in some cases may be problematic.

Although the work is at an early stage, the results obtained so far give cause for concern. In the core study group of 54 people:

- 11.1% have been clinically treated for depression or anxiety;
- 7.4% have a family member who has been treated for depression or anxiety;
- 20.3% are reporting signs of 'post-traumatic experience';
- 44.4% report feelings of anxiety or stress that are not being dealt with;
- 29.6% are reporting on-going health, financial or social problems that they relate directly to the FMD crisis.

We received anecdotal evidence of individual children being emotionally 'withdrawn' during the FMD epidemic but we are not aware of any data that would allow an objective appraisal of any short-term or long-term impact on child health.

Health

There must always be reservations about interpreting the early results of a medium-term research programme, but, with that caveat, the initial results from the University of Lancaster work are disturbing. Moreover, they begin to add some dimensions to the anecdotal information we have received during our public meetings. **We recommend to both researchers and funding bodies that there should be further work into the emotional, social and mental health consequences of FMD in Cumbria, and that the research should be extended to encompass children.** Additionally, we suggest that the health and social welfare departments in the County should closely monitor the results, with a view to introducing effective intervention strategies where appropriate.

