



EUROPEAN COMMISSION
HEALTH & CONSUMER PROTECTION DIRECTORATE-GENERAL
Directorate C - Scientific Opinions
C1 - Follow-up and dissemination of scientific opinions

OPINION ON

**THE USE OF BURIAL FOR DEALING WITH ANIMAL
CARCASSES AND OTHER ANIMAL MATERIALS THAT
MIGHT CONTAIN BSE/TSE**

ADOPTED BY THE

SCIENTIFIC STEERING COMMITTEE

MEETING OF 16-17 JANUARY 2003

OPINION

On 17 May 2002, the Scientific Steering Committee (SSC) was invited by Commission Services to advice on the examples of conditions under which safe burial of potentially TSE-infected (animal) materials can be achieved.

The details of the SSC's evaluation are provided in the attached report. The SSC concludes as follows:

- (1) The term "burial" includes a diversity of disposal conditions. Although burial is widely used for disposal of waste the degradation process essential for BSE/TSE infectivity reduction is very difficult to control. The extent to which such an infectivity reduction can occur as a consequence of burial is poorly characterised. It would appear to be a slow process in various circumstances.
- (2) A number of concerns have been identified including potential for groundwater contamination, dispersal/transmission by birds/animals/insects, accidental uncovering by man.
- (3) In the absence of any new data the SSC confirms its previous opinion that animal material which could possibly be contaminated with BSE/TSEs, burial poses a risk except under highly controlled conditions (e.g., controlled landfill).

The SSC reiterates the consideration made in its opinion of 24-25 June 1999 on "Fallen Stock"¹. The limited capacity for destruction of animal wastes in certain countries or regions in the first place justifies the installation of the required facilities; it should not be used as a justification for unsafe disposal practices such as burial. However, the SSC recognises that for certain situations or places or for certain diseases (including animals killed and recycled or disposed of as a measure to control notifiable diseases), the available rendering or incinerator or disposal capacity within a region or country could be a limiting factor in the control of a disease. Thus if hundreds or even millions of animals need to be rendered after killing or if the transport of a material to a rendering or disposal plant proved to be impractical, an appropriate case by case risk assessment² should be carried out before deciding upon the most appropriate way of disposal. In principle, the risk is expected to be the lower for small incinerators³ as compared to burial. As such decisions in practice may have to be taken at very short notice, risk management scenarios according to various possible risks should be prepared in advance to allow for a rapid decision when the need arises.

¹ Scientific Opinion on The risks of non conventional transmissible agents, conventional infectious agents or other hazards such as toxic substances entering the human food or animal feed chains via raw material from fallen stock and dead animals (including also: ruminants, pigs, poultry, fish, wild/exotic/zoo animals, fur animals, cats, laboratory animals and fish) or via condemned materials. Adopted By the Scientific Steering Committee at its meeting of 24-25 June 1999. (and re-edited at its meeting of 22-23 July 1999).

² See also the relevant sections and footnotes on risk assessment in the report accompanying the SSC opinion of 24-25 June 1999.

³ See SSC opinion of 16-17 January 2003 on the use of small incinerators for BSE risk reduction.

THE USE OF BURIAL FOR DEALING WITH CARCASSES AND OTHER MATERIALS THAT MIGHT CONTAIN BSE/TSE

REPORT

1. MANDATE

On 17 May 2002, the Scientific Steering Committee (SSC) was invited by Commission Services to advise on the examples of conditions under which safe burial of potentially TSE-infected animal materials can be achieved.

The SSC appointed Prof.J.Bridges as rapporteur. His report was discussed and amended by the TSE/BSE ad hoc Group at its meeting of 9 January 2003 and by the SSC at its meeting of 16-17 January 2003.

2. GENERAL CONSIDERATIONS

“Burial” covers a range of disposal situations ranging from the practice of burying animals on farms and other premises in a relatively shallow trench (with or without treatment such as lining) to deep disposal to a lined and professionally managed landfill site (SSC 2001).

Buried organic material is normally decomposed by microbial and chemical processes. However this is not a process amenable to control measures. As noted by the SSC “Opinion on Fallen Stock” (SSC 25th June 1999) there is little reliable information on the extent and rate of infectivity reduction of BSE/TSEs following burial. An old paper by Brown and Gajdusek 1991 assumed a reduction of 98% over 3 years. However it is noted that the rate of degradation of materials following burial can vary very considerably between sites. This is not surprising because the degradation process is strongly influenced by factors such as water content of the site, temperature inside the site, nature of adsorptive “material” present etc. The previous SSC opinion noted that BSE/TSEs appear to be resistant to degradation when stored at room temperature over several years. It also raised concerns that mites could serve as a vector and/or reservoir for the infected scrapie material. Burial sites may have a thriving animal population. Uncovering of risk material that is not deeply buried is therefore possible.

The SSC in its opinion of 28th-29th June 2001 set out a framework for assessing the risk from different waste disposal processes. These criteria may be applied to burial as follows:

(1) Characterisation of the risk materials involved.

Unlike many other waste disposal options there are no technical or economic factors that would limit the nature of the material that can be disposed of by burial. Moreover in many cases the location of burial sites is uncertain. The potential for transmission of BSE/TSEs for SRM that is buried near the surface is also poorly characterised.

(2) Risk reduction

The extent to which the infectivity is reduced is likely to vary substantially according to the nature of the site depth of burial whether pre-treatment by burning or through the addition of lime is used etc. There appears to be no scientific basis at present for the prediction of the rate of loss of infectivity. In the absence of such data, as a worst case, it has to be assumed that over a three-five year period the loss of infectivity may be slight. In principle on a well-managed fully contained landfill the risks from infective material can approach zero. However this requires rigorous management over many years. This is difficult to guarantee.

(3) Degree to Which the Risks can be Contained

The principal concerns are:

- Prevention of access to the SRM by animals that could result in the transmission (directly or indirectly) of the BSE/TSE.
- Penetration of prions into the leachate/groundwater. It is noted that on some landfill sites leachate is sprayed into the air to facilitate oxidation of some organic components. Such a practice could in principle lead to dispersal of BSE/TSEs. It is also noted that it is not uncommon for landfill sites to be re-engineered to increase their stability, gas and leachate flow and/or total capacity. If this re-engineering involved an area where previous burial of BSE/TSE contaminated material had taken place **and** additional risk could accrue. The possibility of contaminated material being dug up in shallow and unmarked burial sites on farms etc constitutes a considerably greater risk.

3. FURTHER INVESTIGATIONS

Research is needed on specific aspects of the behaviour of prion like molecules in controlled landfills i.e.:

- Potential for adsorption to other material present in the waste that might limit their mobility.
- Principal factors influencing rates of degradation.
- Effectiveness of encasement in cement in controlling/reducing the risk.

4. CONCLUSION

In the absence of new evidence the opinion of the SSC “Opinion on Fallen Stock” (SSC 25th June 1999) must be endorsed strongly that land burial of all animals and material derived from them for which there is a possibility that they could incorporate BSE/TSEs poses a significant risk. Only in exceptional circumstances where there could be a considerable delay in implementing a safe means of disposal should burial of such materials be considered. Guidelines should be made available to aid on burial site selection.