

Confusion over status of incinerator bottom ash

Incinerator operators could have to treat bottom ash as hazardous waste because of doubts over its ecotoxicity. This could substantially increase the costs of incineration. The Environment Agency has admitted it does not "have 100% confidence" in its classification of incinerator bottom ash (IBA) as non-hazardous waste.

Martin Bigg, the Agency's head of industry regulation, told ENDS he had "mixed feelings" about whether current tests of ash provide "anything of... value".

Over 710,000 tonnes of IBA was produced by incinerators in England and Wales in 2007. About 55% was sent to non-hazardous landfills, with the rest being 'weathered', through exposure to air and rain, before being used as an aggregate.

If tests show that some IBA is ecotoxic, it could all have to be treated to make aggregate, thereby increasing incineration costs. It would also call into question the classification of IBA as 'inactive waste' by the Treasury. Inactive wastes only pay £2.50 landfill tax per tonne, compared with £40/tonne for 'active' materials.

IBA has been a controversial issue since 2000, when it made front-page news. It was discovered that mixed IBA and fly ash was contaminated with dioxins and heavy metals from an incinerator in Byker, Newcastle, which had been spread on local allotments (ENDS Report 304, pp 17-18).

Concern over its ecotoxicity dates from October 2005 when the Health and Safety Executive reclassified zinc oxide, a potential compound in ash, as ecotoxic, joining zinc chloride and all lead compounds. At the same time, the Agency drafted new guidelines for testing ecotoxicity. These said ecotoxic compounds could not make up more than 0.25% of wastes. If a laboratory cannot determine what compounds are present or it is unclear from scientific literature, the "worst case" should be assumed.

The guidelines presented a problem for waste companies because it is difficult to identify the zinc and lead compounds in ash. Veolia wrote to the Agency saying "around 40%" of its IBA would become ecotoxic.

The Agency did not publish its final guidelines until May 2008. ENDS reported that ash would now likely be classed as hazardous due to the presence of zinc oxide (ENDS Report 401, p 19). But the Agency said this was wrong and asked for a correction. "Although work undertaken has found that zinc may be present in IBA... this is likely to be in the form of a benign complex mineral rather than as ecotoxic zinc oxide," it said (ENDS Report 402, p 19).

Following complaints from groups including the UK Without Incineration Network, ENDS asked the Agency for the evidence behind its view. This appears to be shaky. The Agency's primary reference document, a World Health Organization book on zinc, contains no mention of IBA. And its other references do not provide conclusive evidence that zinc oxide and chloride are not present in IBA.

Other evidence appears against the Agency. An international team of scientists led by Germany's environment agency will soon publish a book on aquatic and terrestrial tests to ascertain the ecotoxicity of wastes.¹ The group tested IBA from a Dutch municipal waste incinerator and found it to be ecotoxic.

When asked about this paper, the Environment Agency said "composition of ash does depend on feedstock". But the evidence it supplied to ENDS does not relate to UK incinerators either.

UK waste industry trade body, the Environmental Services Association (ESA), said it has done direct testing work which shows IBA is non-hazardous. But the Agency disagreed with the methodology used.

The Agency now appears to have made a u-turn. Martin Bigg said he would shortly meet the ESA to discuss how ash can be tested to ensure evidence of its hazardous status is robust and transparent. If there is significant doubt over what compounds are present, the ash should be defined as hazardous, he said.

"We have to realise there may be cost implications," he said. "The operators of incinerators [may] have to go to councils and ask where these hazardous components are coming from. Where is the zinc coming from? Where is the lead coming from? Let's get the feedstock right so we don't have this problem."

There are other ways to deal with IBA than removing all metals before incineration. Companies such as Ballast Phoenix already leave the ash outside to undergo weathering. But Greenpeace UK's chief scientist David Santillo said it should not be assumed that weathered

ash is non-hazardous and it should be tested for ecotoxicity before being used as an aggregate.

However, even if the Agency does change its view, it does not appear to be in a position to decide whether companies are actually misconsigning IBA as non-hazardous waste. ENDS asked to see ash sampling data from LondonWaste for its Edmonton incinerator. But the Agency said the data could not be used to ascertain whether ash exceeded ecotoxicity thresholds.

It is not clear whether the data needs to be adjusted for moisture content, a spokesman said. It is also impossible to tell what form the lead is in. "Although almost all lead compounds are classified as ecotoxic, lead metal is not," they said. "This information cannot be obtained from an elemental analysis."

"For the Agency to leave [classification] to operators is shocking," said Alan Watson of Public Interest Consultants, a body that has worked extensively on this issue. "If the Agency does not take control and do its own independent sampling, operators are likely to carry on consigning ash as non-hazardous. At the moment, the Agency is not putting its eye to the telescope."

The Agency is developing a protocol for IBA to define the point at which it is can be classed as a product and so outside waste controls (ENDS Report 389, p 17). A technical working group is assessing IBA's impacts on water and health when used as aggregate, but is not assessing whether the material is ecotoxic.

Further information:

* 1. Ecotoxicological classification of waste, available at www.springer.com for £81.50 (<http://www.springer.com>)

ENDS Report 410, March 2009, pp 23-24 © 2009 Haymarket Business Media

UKWIN has been granted permission by ENDS to reprint this article, as long as the source is credited.