



ZERO
WASTE
EUROPE

A toxic legacy

Bottom ash in Europe's circular economy

Executive summary

by Dr Andrew Neil Rollinson

May 2026

zerowasteurope.eu



Executive summary

Across Europe, approaches to the use of incinerator bottom ash (IBA) in roads and paths, as well as in concrete and cemented blocks, are inconsistent. This waste material, a mixture of dust, ash, glass, sand, stones and tiles, also contains persistent organic pollutants (POPs) and potentially toxic elements (PTEs). These substances can leach into the surrounding environment across a wide range of timescales and conditions.

Regulation is weak and fragmented, while decision-making often favours industrial profit margins over the protection of human and environmental health. Case studies evidence a regulatory “Wild West”, with permitting of untreated wastewater discharge, combined with a reliance on industry-devised testing protocols that leniently permit a non-hazardous classification for a material that is demonstrably hazardous.

Microplastics and PFAS are among the many organic pollutants in bottom ash that are inadequately addressed by regulation. Processing methods intended to improve the quality of IBA are non-standardised and insufficient for the removal of toxic substances, often involving trade-offs whereby one improvement measure increases the risk of pollution from other pollutants. In practice, risk pathways vary by jurisdiction.

In unbound applications, the principal concern is leachate release and the uncontrolled dispersal of contaminants over time, particularly where monitoring and end-of-life controls are limited. Long-term structural stability of IBA remains a concern for bound applications due to the potential for swelling and cracking from gas release. Meanwhile, risks to occupational health – through cutting, drilling, grinding, and similar activities involving concrete and cement-based IBA products – are hardly acknowledged.

Legally in Europe, to create bottom ash – incineration of waste – is not considered recycling, nor is the use of its ‘mineral fraction’ in civil engineering applications. Only the extraction of metals from IBA qualifies as recycling.

The primary driver for the use of bottom ash as a construction material is the high costs of disposal for industry, rather than any environmental benefit. The use of the BA ‘mineral fraction’ disseminates hazardous substances throughout the built environment, creating a toxic legacy for future generations, despite the European Commission’s requirement for any future circular economy to be “*toxic-free*”.



Zero Waste Europe (ZWE) is the European network of communities, local leaders, experts, and change agents working towards a better use of resources and the elimination of waste in our society. We advocate for sustainable systems; for the redesign of our relationship with resources; and for a global shift towards environmental justice, accelerating a just transition towards zero waste for the benefit of people and the planet. www.zerowasteurope.eu



Zero Waste Europe gratefully acknowledges financial assistance from the European Union, Gallifrey Foundation and the United Kingdom Without Incineration Network (UKWIN). The sole responsibility for the content of this material lies with Zero Waste Europe. It does not necessarily reflect the opinion of the funders mentioned above. The funders cannot be held responsible for any use that may be made of the information contained therein.



Authors: Dr Andrew Neil Rollinson for Zero Waste Europe
Editors: Janek Vähk, Dorota Napierska, and Nanna Cornelsen
Date: May 2026

General information: hello@zerowasteurope.eu
Media: news@zerowasteurope.eu
Cities-related topics: cities@zerowasteurope.eu

www.zerowasteurope.eu
www.zerowastecities.eu
www.missionzeroacademy.eu

