

In response to the FR Notice of Receipt, comments were received from 8 individuals and 10 organizations. Several samples of current cement packaging and Material Safety Data Sheets (MSDSs) were also received. All comments were reviewed and considered by the Agency before reaching its final determination to deny the petition.

III. Background

On April 19, 1995, EPA received a petition under section 21 of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2620, signed by 24 environmental groups located in 10 western and mid-western States. The petition asserts that cement-producing plants that burn hazardous waste-derived fuel (WDF) in their kilns have higher concentrations of toxic metals in their cement end-products, and that these products therefore pose risks to end-users. The petition requests that EPA promulgate a rule under section 6 of the TSCA requiring those producers who burn WDF to label their products, in both English and Spanish, with the following label.

WARNING: THIS PRODUCT WAS MADE WHILE BURNING HAZARDOUS WASTE AND CONTAINS RESIDUALS OF THAT HAZARDOUS WASTE, INCLUDING INCREASED AMOUNTS OF TOXIC AND CARCINOGENIC METALS. AVOID EMITTING AND BREATHING DUST FROM THIS PRODUCT AND AVOID DIRECT CONTACT WITH THIS PRODUCT.

Cement is made by heating limestone, clay and other substances to very high temperatures in rotary kilns to form a granular material called "clinker", which is then cooled and ground up with gypsum to make cement powder. Cement kiln dust (CKD) waste is generated during the production of clinker. Releases to air, water and land from cement kilns are regulated under the Clean Air Act (CAA), Clean Water Act (CWA), and Resource Conservation and Recovery Act (RCRA). In 1992, 23 of the 111 domestic cement-producing plants burned WDF to supplement traditional fossil fuels (FF) (Ref. 3, p.7367). Air emissions and disposal of residues from kilns burning WDF are regulated under the Boiler and Industrial Furnace (BIF) regulations issued under RCRA.

While not central to the petition, CKD is tangentially related to petitioners' concerns. CKD is particulate matter, including toxic metals, that has been removed from kiln stack gases by air pollution control equipment. Once removed, CKD may be: (a) reintroduced into the kiln as feedstock; (b) used for such beneficial purposes as general

construction, waste stabilization, or as a substitute for lime and fertilizer in agriculture; or (c) simply disposed. Pursuant to RCRA section 8002(o), EPA published a *Report to Congress on Cement Kiln Dust* in 1993 in which the Agency concluded that although risks associated with CKD management are generally low, CKD could, under some circumstances, pose a danger to human health and the environment (Ref. 2). No decision was made at that time regarding the need to treat CKD as hazardous waste under RCRA Subtitle C.

In February of this year, pursuant to RCRA section 3001(b)(3)(C), the Agency published a *Regulatory Determination on Cement Kiln Dust* (60 FR 7366, February 7, 1995) in which it concluded that additional control of CKD is warranted, and that it would use RCRA Subtitle C and other authorities to control risks where appropriate (Ref. 3). Pending development of those regulations, CKD retains its exemption from regulation under Subtitle C pursuant to the Bevill Amendment contained in section 3001(b)(3)(A). The Regulatory Determination also stated that the Agency would propose exclusion of clinker as "derived-from" hazardous waste when CKD is reintroduced into the kiln as feedstock. Although the Bevill Amendment conditionally exempted CKD from regulation as hazardous waste under Subtitle C, the BIF regulations require kilns burning WDF to test their CKD to ensure that it is not significantly affected by the practice (40 CFR 260.112).

The activities described above address CKD waste disposal issues (the focus of both the Report to Congress and the Regulatory Determination). The petition, on the other hand, is primarily concerned about potential hazards to users posed by toxic metals introduced into cement via combustion of WDF. There are, however, four sources of toxic metals in cement: (1) the original feedstock; (2) CKD recycled as feedstock; (3) the fuel, both FF and WDF, used to heat the kiln; and (4) equipment and processes used, particularly refractory kiln bricks and the steel balls used to grind clinker (Ref. 1, p.50). The relative contribution of each of the four potential sources varies by an unknown extent from facility to facility and from time to time. The concentrations of metals in cement from any given plant are a function of complex interactions among all of these variables. A plant burning FF, using feedstock with a high metal content, and recycling CKD extensively, for example, might produce cement with high

concentrations of metals, while one burning WDF using the same feedstock, but discarding most of its CKD, might produce cement with lower concentrations.

IV. Adverse Effects Associated with Cement

Based on information provided by petitioners, adverse effects associated with cement cited in the petition include: (a) cement eczema or cement dermatitis; (b) lung cancer; (c) asthma; and (d) a variety of other effects including nosebleeds, ulcers, respiratory distress and pneumoconiosis. Of these, cement dermatitis is the most common effect associated with cement, because the relationship between exposure to cement and dermatitis is well-established, and because the effect can occur at relatively low levels of exposure. Frank cement dermatitis is generally preceded by a number of years of skin irritation, abrasions, and cracks. Once established, cement dermatitis is chronic, even if there is no further exposure to cement. The dermatitis sensitization threshold is reported to be in the range of 10 to 15 parts per million (ppm) hexavalent chromium in cement.

V. Analysis of Petition

As general background, petitioners argue that CAA, CWA and RCRA regulations are tightening restrictions on kiln-generated discharges of toxic metals to air, water and land, without restricting transfer of these metals into the cement itself. They contend that this incentive structure has increased the toxic metals content of cement. However, petitioners offer no evidence that concentrations of metals in cement have in fact increased. With respect to the objective of the petition, EPA notes that if restricting toxic metals from all compartments except the end-product is a problem, it would be a problem for all kilns, not simply those burning WDF. The essence of the petition is the more specific assertion that burning WDF increases the amount of toxic metals in cement.

The petition's assertion is based entirely upon evidence petitioners adduce from a 1992 study, published by the Portland Cement Association (PCA), that presented data on heavy metal concentrations found in both CKD and cement produced in facilities using FF only, and in facilities using WDF (Ref. 1). The study determined both "total" (acid soluble) and "leachable" (water soluble) concentrations of 12 metals (arsenic, antimony, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver and thallium) in both CKD and cement drawn from 97