



In the effort to preserve and maintain the fragile ecology of our planet, these recently selected abstracts are represented to help readers of Journals of Materials Engineering and Performance stay current on legislation and compliance with global environmental issues and regulations. They are reprinted from Metals Abstracts and Materials Business File with permission from Materials Information, a joint service of ASM International, Materials Park, Ohio, and the Institute of Materials, London, England.

State and Possibilities of the Recycling of Scrap Electronics [Original Title: Stand und Möglichkeiten des Elektronikschrott-Recycling.] The present draft of the German scrap-electronics ordinance has not passed parliament yet. Nevertheless owing to the draft ordinance, several methods and techniques were developed to cope with the complex tasks. For the recycling of scrap electronics, techniques of dismantling by hand as well as mechanical, chemical, and thermal processes are available. It is essential to combine these techniques and processes sensibly, to find an ecologically and economically consistent overall solution for the revalorization of scrap electronics. However, apart from the to be created capacities for the recycling of electrical and electronic appliances, there are also some technical problems (e.g., recycling of plastic and recovery of fluorescent substance) still to be solved in order to implement the scrap-electronics ordinance in the sense of the legislator.

H. Ibold and B. Bilitewski. Cited: *Erzmetall*, Vol 47 (No. 9), Sept 1994, p 554-561 [in German]. ISSN: 0044-2658. PHOTOCOPY ORDER NUMBER: 199501-43-0020.

Limiting Emissions of Volatile Organo-Halogens. [Original Title: Emissionsbegrenzung von Leichtflüchtigen Halogenkohlenwasserstoffen.] The positions are described of metal finishing operators with older (in use prior to 3 Jan 1991) plant and more recent installations, following the coming into force of legislation (2.BImSchV) limiting the emissions of volatile organo-halogens. A detailed discussion is offered as to which organo-halogens can be used as solvents and under which constraints and for how long. The permitted future life of older plants is also considered as are the conditions governing construction and performance of new plants. The plant operator is required himself to audit the throughput of volatile halocarbons as well as submitting to external control. As of 1 Jan 1995, only sealed systems will be permitted, in which emissions may not exceed a concentration of 1 g/m³.

H.P. Sander. Cited: *Galvanotechnik*, Vol 82 (No. 10), Oct 1991, p 3545-3551 [in German]. ISSN: 0016-4232. PHOTOCOPY ORDER NUMBER: 199411-58-1139.

Environmental Measures in European Sinter Plants and Blast Furnaces. This paper, presenting results from an inquiry involving several countries of the European Blast Furnace Committee, emphasizes the differences which exist between the regulations in force in individual countries. In view of the single European Market of 1993 uniform regulations for all countries of the European Community should be the aim. Therefore it is evident that more or less extensive equipment will need to be installed to meet the requirements. This forms the object of intensive studies and efforts at present. The European Blast Furnace Committee will certainly contribute to these efforts by an active exchange of ideas and experience. However, it is necessary to discuss environmental protection problems also with overseas countries such as Japan.

H.B. Lungen and W. Theobald. Cited: *Second European Ironmaking Congress* (Glasgow, Scotland), 15-18 Sept 1991, The Institute of Metals, London, 1991, p 275-288 [in English]. ISSN: 0-901716-23-5. PHOTOCOPY ORDER NUMBER: 199411-42-1010.

Reclaiming the Ravenscraig Site. The closure of an integrated works the size of Ravenscraig in Scotland (owned by British Steel) has huge long-term development implications for the area in which it is situated. In Dec 1992, Lanarkshire Development Agency, in partnership with Scottish Enterprise, invited British Steel plc, Motherwell District Council, and Strathclyde Regional Council to cooperate in a Steering Group to draw up

development proposals for Ravenscraig. The aim of the Development Group was to devise a strategy which would encourage development and at the same time deal with the contamination from the steelmaking process. Cited: *Steel Times*, Vol 222 (No. 11), Nov 1994, p 438 [in English]. ISSN: 0039-095X. PHOTOCOPY ORDER NUMBER: 199501-S4-0005.

Neste seeks approval for dioxin incineration. In the latest case of discovered dioxin-contaminated waste, Neste is to seek permission for 800 m³ of VCM production sludge belatedly found at its Porvoo site in Finland to be incinerated by Ekokem at a cost of >FM 20 million (\$4 million). The sludge contains 0.025 mg of dioxin equivalent/kg of dry matter) a total of 120 g. Neste admits this is a high concentration. As with earlier controversies involving dioxin-contaminated waste at Norsk Hydro's plant at Stenungsund, Sweden, and ICI's unit at Wilhemshafen in Germany, Greenpeace is claiming local authorities only became interested in the issue and asked the companies to investigate the matter after the group had published its report on VCM facilities, Dioxin Factories, in the spring of 1993.

Cited: *Chem. News*, Vol 62 (No. 1648), 19 Dec 1994-1 Jan 1995, p 22 [in English]. ISSN: 0014-2875. PHOTOCOPY ORDER NUMBER: 199501-P4-0008.

Plastics without Phosgene. Japan's Asahi Chemical and Italy's Enichem are busily commercializing new "greener" processes to eliminate toxic reagents and solvents from polymer production processes. One of the drawbacks of polycarbonate (PC) and polyurethane (PU) plastics is that the usual production processes use highly toxic phosgene (COCl₂). Asahi has announced new phosgene-free processes for PC and PU that are running at pilot scale. Asahi's breakthrough has been to make PC by a solid state polymerization, which had not been considered feasible for amorphous polymers. Italy's Enichem is promoting dimethyl carbonate as a clean replacement for many chlorinated solvents, and as a potential oxygenate for petrol, in addition to its use as a feedstock for PC and isocyanates for PU.

Cited: *Chem. Br.*, Vol 30 (No. 12), Dec 1994, p 970 [in English]. ISSN: 0009-3106. PHOTOCOPY ORDER NUMBER: 199501-P4-0006.

SPI Offers Two Bulletins on Protective Clothing for Use in Handling Isocyanates. The Polyurethane Division of the Society of Plastics Industries has made available two bulletins: "PMDI User Guidelines for Chemical Protective Clothing Selection" and "TDI User Guidelines for Chemical Protective Clothing Selection." They are for users of polymeric methylene diisocyanate (polymeric MDI or PMDI) or toluene diisocyanate (TDI), which are chemical elements used in the production of polyurethanes. For a single copy of either bulletin, contact the Polyurethane Division, SPI, Inc., 355 Lexington Ave., New York, NY 10017, USA.

Cited: *Urethane Plast. Prod.*, Vol 24 (No. 11), Nov 1994, p 8 [in English]. ISSN: 0049-5700. PHOTOCOPY ORDER NUMBER: 199501-P4-0003.

New Tin Industry Body to Boost Usage. The Association of Tin Producing Countries (ATPC) is transferring responsibility for the research and development activities of the International Tin Research Institute to ITRI Ltd. a new body made up of, initially, six tin producers: PT Timah and PT Koba Tin of Indonesia, Renison of Australia, Somincor of Portugal, Malaysia Mining Co. and Minsur in Peru. Other producers are being encouraged to join. The Institute aims to increase tin consumption by 20,000 to 30,000 tons/year within three years and will promote more consumer projects. The funding body will pay a levy of \$30.00/ton of production to finance the effort.

Cited: *Met. Bull.*, Vol 7932, 21 Nov 1994, p 5 [in English]. PHOTOCOPY ORDER NUMBER: 199501-G7-0024.

Regulatory News: What's the Question? What is OSHA's soon-to-be-proposed ergonomics standard? The answer is: a grossly overreaching, hideously expensive, and hopelessly bureaucratic nightmare of a solution to an imagined crisis. According to an OSHA summary of the planned proposal, employers would be required to perform an ergonomics evaluation of all tasks performed by any employee with a work-related "musculoskeletal disorder." To help employers conduct these ergonomic evaluations, OSHA is providing risk factor check lists, including specific forms for office work and manual handling.

Cited: *CI Compos.*, Dec 1994-Jan 1995, p 8 [in English]. PHOTOCOPY ORDER NUMBER: 199501-D4-0001. [U.S.] **Federal Regulations Highlights.** U.S. regulatory issues that may have impact on the ceramic industry are summarized. For example, the EPA has approved Ohio's rule entitled "Federally Enforceable Limitations on Potential to Emit" (Rule 3745-35-07) under the Clean Air Act of 1990. The rule creates federally enforceable limitations that would reduce a source's potential to emit criteria pollutants under Section 110 and hazardous air pollutants under Section 112 of the CAA. Also, DOI issued a proposed rule to revise Natural Resource Damage

Assessment (NRDA) regulations on 8 Aug 1994 (59FR-40319). This proposal describes expedited procedures for assessments of relatively minor discharges or releases into the Great Lakes environments.

Cited: *Am. Ceram. Soc. Bull.*, Vol 74 (No. 1), Jan 1995, p 14 [in English]. ISSN: 0002-7812. PHOTOCOPY ORDER NUMBER: 199501-C4-0002.

[U.S.] **Clean Air Act Update: Operating Permit Program Issues.** One issue that Title V operating permit applicants will frequently encounter in preparing permit applications is what permit conditions are considered federally enforceable for inclusion in the Title V permit. The U.S. Environmental Protection Agency policy on the federal enforceability issue is summarized. A recent order by the U.S. District Court in Arizona may have potentially significant long-term consequences for sources of particulate matter such as the refractories industry. The court ordered the EPA to complete its review of the current NAAQS (National Ambient Air Quality Standard) for particulate matter and to propose a revised standard if warranted by 31 Jan 1997.

K.Berry. Cited: *Ceram. Ind.*, Vol 143 (No. 7), Dec 1994, p 25 [in English]. ISSN: 0009-0220. PHOTOCOPY ORDER NUMBER: 199501-C4-0001.

Photocopies of complete articles are available from the MI Document Delivery Service at ASM; please call 216/338-5151, ext. 450 for order and price information.

Furthermore. . .

The International Copper Association has published a report, *Recyclability and Energy Efficiency: the Case for Copper in Car and Truck Radiators*. According to the report, close to 10% of copper scrap in the U.S. comes from radiators, making copper radiator recyclability close to 100%. With the development of no-flux brazed copper and brass radiators, copper's recyclability will be enhanced even further. These radiators will be 30-40% lighter than traditional copper and brass radiators and could have a 10-year life. For a copy of the report, contact Johan Scheel, Director of Industrial Programs, International Copper Association, 260 Madison Avenue, New York, NY, 10016; tel: 212/251-7244; fax: 212/251-7245.

Energy BioSystems Corporation has been awarded a \$2 million federal grant for development of a biotechnology-based method of removing sulfur from crude oil. Sulfur in crude oil is a major source of air pollution and a key factor in determining the value of various grades of crude oil. Conventional technology cannot effectively remove sulfur prior to refining.

Rep. Fred Upton (R-Mich.) has received the Give Recycling a Hand Award from the Institute of Scrap Recycling Industries. Upton was recognized for his long support of recycling, as well as his work on Superfund legislation in the 103rd. Congress.

METLCAP, a patented technology for economical stabilization, encapsulation, and solidification of hazardous heavy metals (including lead, mercury, arsenic, barium, cadmium, chromium,

selenium and silver), is based on a chemical cement matrix that can achieve compressive strengths high enough to act as structural foundations. This magnesium oxychloride soils-cement sets and hardens in approximately three hours, forming a very strong barrier against migration into adjacent lands or into the water table, rendering the heavy metals essentially immobile. For further information, contact J. Norman Stark, Stark Encapsulation, 960 Leader Building, 526 Superior Avenue NE, Cleveland, OH 44114-1401; tel: 216/696-2390; fax: 216/696-6375.

RIMtech Inc. and Sandia National Laboratories have *commercialized an approach adapted from mining to identifying subsurface contamination at landfills and other environmental sites*. The approach involves sending nondestructive electromagnetic signals from transmitters in boreholes to receivers, located either at the surface or in other boreholes underground. The change in the EM signals as they pass through layers of rock, soil, and waste debris, is used to create a computer-generated image of the subsurface. For further information, contact Kenneth Maher, RIMtech, tel: 303/650-1699; fax: 303/650-0041.

The Steel Products Division of FMC Corporation has *installed a Hyde Wastewarrior Ultrafiltration System in order to reduce wastewater costs*. The plant normally produces about 425,000 gallons of wastewater per year, which required disposal. With the implementation of ultrafiltration, a cost savings of over \$430,000 in waste disposal per year has been achieved. Only 90,000 gallon of waste now require hauling. For further information, contact Hyde Products Inc., 28045 Ranney Pkwy., Cleveland, OH 44145; tel: 216/871-4885; fax: 216/871-1143.