

95/06461 Advanced limestone-based wet flue-gas desulfurization

Klingspor, J. S. and Bresowar, G. E. *ABB Review*, 1995, (8), 23-27. Describes the LS-2 which is an advanced wet flue-gas desulfurization (FGD) system from ABB Environmental Systems, USA, offering superior performance at significantly lower capital and operating costs than other wet FGD technologies. The overall cost-saving is estimated to be between 15 and 30 percent, making the LS-2 technology cost-competitive with fuel switching in most cases. LS-2 system features have been extensively tested in full-scale and pilot-scale facilities. A commercial LS-2 system was recently installed at the 130-MW Niles generating station of the Ohio Edison Company.

95/06462 Advanced utilization of coal for electric power generation and environmental plans. 2. Environmental plans

Omura, K. *et al.*, *Kagaku Sochi*, 1995, 37, (4), 107-112. (In Japanese) The paper discusses air pollution prevention caused by coal for electric power generation.

95/06463 Analysis of potential radocesium soil contamination: A case study using two different simulation models

Persicani, D. *J. Environ. Radioactivity*, 1995, 27, (2), 161-180. An agricultural area near to a nuclear power plant in Northern Italy was used to evaluate the radocesium leaching predictions obtained by employing two models which differently approach the solute sorption process (linear equilibrium sorption or diffusion-controlled sorption kinetics). Assessments were made through both statistical tests and radiological risk map comparison. Twenty-eight soil samples were taken based on a wide regular grid and analysed for routine physicochemical soil parameters. Specific sorption parameters were calculated by empirical equations derived from regression analyses of literature data.

95/06464 Anthracosilicosis

Zabudyaev, G. S. *Ugol'*, 1994, (10), 43-44. (In Russian) Discusses the relationship between the frequency of anthracosilicosis among coal miners and the volatile matter content of coal.

95/06465 Apparatus for desulfurization of gases from coal gasification

Hashimoto, K. and Tamamushi, F. (Assigned to) *Ishikawajima Harima Heavy Ind., JAP. Pat. JP.06,340,884, Dec. 1994.*

95/06466 Assessment of environmental external effects in the production of energy

Meyer, H. *et al.*, *Risoe Natl. Lab., Report Risoe-R.770, 180 pp. (In Danish)*

The purpose of the report is to assess the environmental effects of the production of energy. The project has been carried out in collaboration between Risoe National Laboratory and the Technical University of Denmark. The report compares environmental externalities in the production of energy using renewable and non-renewable energy sources, respectively. The comparison is demonstrated by two specific case studies. In the report, the individual externalities from the different ways of producing energy are identified, the stress caused by the effect is assessed, and, finally, the monetary value of the damage is estimated. The method is applied to local as well as regional and global situations.

95/06467 Assessment of in situ solvent extraction for remediation of coal tar sites: Column studies

Roy, S. B. *et al.*, *Water Environ. Res.*, 1995, 67, (1), 4-15. Describes the feasibility of coal tar site remediation by the injection and recovery of water-miscible, biodegradable solvents. The overall objective of the study was to estimate the cleanup time and solvent volume required for remediation. Describes the results of column experiments, performed by passing solvent-water solutions through glass bead-packed columns contaminated with coal tar blobs at low volumetric saturation. This experimental design allowed the investigation of dissolution rate limitations at residual saturations similar to those observed in the field, albeit under more homogeneous conditions.

95/06468 Assessment of in situ solvent extraction for remediation of coal tar sites: Process modeling

Ali, M. A. *et al.*, *Water Environ. Res.*, 1995, 67, (1), 16-24. Subsurface contamination at many former manufactured gas plants resulted from on-site disposal in wells, pits, and lagoons of coal tar, a byproduct of the gasification process. A water-miscible, biodegradable solvent would be injected into the subsurface to promote dissolution of coal tar from subsequent removal via recovery wells. After evaluation of manufactured gas plant site characteristics, possible injection-recovery well schemes for the proposed process were developed. A 2-dimensional model was developed for simulating the proposed in situ solvent extraction process under simplified site conditions and applied to evaluate the performance of the various injection-recovery schemes at a hypothetical gas plant site.

95/06469 Assessment of precision of a passive sampler by duplicate measurements

Lee, K. *et al.*, *Environment Int.*, 1995, 21, (4), 407-412. Duplicate measurement is a common method to determine of a sampling method in an air pollution field study. Several evaluating measures for the precision of the sampling method are explored with duplicate measurements of two types of passive samplers, such as nitrogen dioxide diffusive badge and carbon monoxide passive sampler. Presentation of duplicates in a graph as one of the evaluating measures can be affected by different assignment of each measurement in vertical and horizontal axes. Although absolute difference or relative error among duplicates can quantitatively represent the precision, interpretation of these values depends on the measured concentration range. Intraclass correlation coefficient, often used for an indicator of the reliability of measurements, is an appropriate statistical measure to present a relative similarity of duplicate measurements.

95/06470 Atoms, radiation and radiation protection

Turner, J. E. *John Wiley & Sons Inc., PO Box 6793, Dept.063, Somerset, NJ.08875-9977, USA, \$69.95, 555 pp.*

This second edition offers an analysis of radiation, its detection, measurement, and tested procedures to protect people and the environment from its effects. Also discusses radon which is new to this edition, and a revised chapter on statistical tools for the profession.

95/06471 Batch nickel removal from aqueous solution by sphagnum moss peat

Ho, Y. S. *et al.*, *Water Res.*, 1995, 29, (5), 1327-1332. The batch adsorption of Ni(II) onto sphagnum moss peat was studied. The reaction was pH dependent with an optimum 4.0-7.0. Langmuir and Freundlich isotherms, established for various initial Ni concentrations and for a range of pH, were used to obtain a single relation between initial metal concentration, metal removal, and initial pH. The latter controlled efficiency of Ni removal.

95/06472 Breakthrough study of the adsorption and separation of sulfur dioxide from wet gas using hydrophobic zeolites

Tantet, J. *et al.*, *Gas. Sep. Purif.*, 1995, 9, (3), 213-220. The adsorptive and kinetic behaviour patterns of SO₂ and water vapour on mordenites and pentasil zeolites were investigated using the breakthrough curve method. For all the zeolites studied, the breakthrough experimental data show a decrease in the equilibrium capacities for both SO₂ and H₂O with increasing SiO₂/Al₂O₃ ratio. At the lower ratios SO₂ adsorption is believed to be influenced by the basicity of the zeolite. The presence of water in the gas reduces its SO₂ capacity to varying degrees, depending on the SiO₂/Al₂O₃ ratio. In contrast, the presence of CO₂ (in the wet SO₂-containing gas) has very little effect.

95/06473 Brittle fracture safety assessment

Nuclear Technology Publishing, PO Box 7, Ashford, Kent TN23 1YW, UK, £24.00, \$38.00, 132 pp.

Proceedings of the Second Technical Seminar on Brittle Fracture Safety Assessment of Ductile Iron Containers for Shipping and Storage of Radioactive Materials, held 27-28 October 1994, in Krefeld, Germany. The papers discuss the materials and construction used for transport/storage casks for radioactive materials.

95/06474 Capture and recovery of nitrogen compounds in methylnaphthalene oil using aluminum sulfate supported on silica gel under supercritical CO₂ conditions

Sakanishi, K. *et al.*, *Nippon Enerugi Gakkaiishi*, 1995, 74, (2), 109-113. (In Japanese) Capture and recovery of nitrogen compounds in methylnaphthalene oil were examined by supercritical CO₂ extraction in a fixed-bed containing 10 wt.% Al₂(SO₄)₃/SiO₂ solid acid.

95/06475 Carbon coalitions. The cost and effectiveness of energy agreements to alter trajectories of atmospheric carbon dioxide emissions

Edmonds, J. *et al.*, *Energy Policy*, Apr.-May 1995, 23, (4), 309-335. The paper examines the potential regional costs and benefits of participation in a set of hypothetical protocols to stabilize fuel carbon emissions. Shows that the particular construct of a stabilization agreement can greatly influence the potential acceptability and stability of that agreement. Any agreement to control fossil fuel carbon emissions, no matter how skillfully crafted, will require a process of constant revision in the terms of participation, because the economic needs of its participants will be evolving.

95/06476 Carbon dioxide disposal in carbonate minerals

Lackner, K. S. *et al.*, *Energy*, Nov. 1995, 20, (11), 1153-1170. The authors introduce a safe and permanent method of CO₂ disposal based on combining CO₂ chemically with abundant raw materials to form stable carbonate minerals. Substantial heat is liberated in the overall chemical reaction so that cost will be determined by the simplicity and speed of the reaction rather than the cost of energy. Preliminary investigations have been conducted on two types of processes, involving either direct carbonation of minerals at high temperature or processing in aqueous solution. Promising raw materials are identified in both cases. For aqueous processing, a chemical cycle employing well-known reactions is proposed for digesting and carbonating the raw material.