The purpose of this Bulletin is to list both what is being published in the world literature pertaining to solid waste management and being abstracted for input into the Solid Waste Information Retrieval System (SWIRS). SWIRS accessions cannot be all-inclusive; the holdings represent only that portion of the massive literature rapidly being generated that seems most significant. SWIRS holdings cover the period from 1964 to the present and include both periodical and nonperiodical literature. The new accessions published in the Bulletin are arranged alphabetically by author within appropriate subject categories. Each item furnishes the accession number, a descriptive sentence, and a complete bibliographic citation, including the author(s), title, source, pagination, and date of publication. (Author/JP)
The purpose of this Bulletin is to show both what is being published in the world literature pertaining to solid waste management and being abstracted for input into the solid waste information retrieval system (SWIRS). SWIRS accessions cannot be all-inclusive; the holdings represent only the most significant portion of the massive literature rapidly being generated. This, however, is exactly what those concerned with solid waste management need to keep abreast of, and this can be done by reviewing the contents of each monthly Accession Bulletin.

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The brief description given with each item is not the full abstract. To order complete abstracts of any item listed in this Bulletin, please refer to the accession number appearing in brackets on the right below each citation, and send the request to SWIRS, Solid Waste Management Office, U.S. Environmental Protection Agency, 5600 Fishers Lane, Rockville, Maryland 20852.
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AGRICULTURAL WASTES

Hart, S. A. Agricultural wastes management in the future. Agricultural Engineering, 49(12):729,752, Dec. 1968. Three areas in which improved agricultural waste management will be necessary in the future include: livestock and their wastes, crop residue problems, and municipally generated wastes disposed of agriculturally.


AGRICULTURAL WASTES—ANIMAL


AGRICULTURAL WASTES—CROP

Clark, T. F., E. C. Lathrop. Corncobs - their composition, availability, agricultural and industrial uses. Peoria, U.S. Department of Agriculture Northern Regional Research Laboratory, Apr. 1953. 67 p. The structural composition and physical characteristics of corncobs are described and representative analyses of their chemical composition are presented.

Clark, T. F., E. C. Lathrop. Dry grinding of agricultural residues a new industrial enterprise. Peoria, U.S. Department of Agriculture Northern Regional Research Laboratory, May 1952. 48 p. The physical and chemical characteristics of residues of commercial value are reviewed.
Clark, T. F., E. C. Lathrop. *Nut shells and fruit pits: their composition, availability, agricultural and industrial uses.* Peoria, U.S. Department of Agriculture Northern Regional Research Laboratory, Feb. 1953. 39 p. Annual production rates are given by state for various fruits and nuts and methods of disposition of shells and pits at food processing plants are described.

Hough, J. H., H. T. Barr. *Possible uses for waste rice hulls in building materials and other products.* Bulletin 507, Baton Rouge, Louisiana State University, A & M.C. Agricultural Experiment Station, June 1956. 36 p. Research work was directed toward producing a concrete from rice hulls which could be used in block or monolithic form and perfecting a method of production which would enable the farmer to make his own cement-rice hull concrete by simple means.


*New approach to disposal of cotton crop wastes.* Agricultural Research, 17(6):13, Nov. 1968. An experimental machine promises to dispose of old-cropstalks and roots in cottonfields by cutting the stalks and removing the roots in a single operation, separating 88-97 percent of the roots.

**COLLECTION**


*New collection trucks solve sanitation problem.* Public Works, 99(8):109, Aug. 1968. Garfield Heights, Ohio has been able to switch from bi-weekly to weekly refuse pickups due to the purchase of two 40-cu yd capacity Gar Wood (T-100) refuse-collection trucks.

Ralph Stone and Company, Inc., Engineers. Field survey and analysis. In A study of improved refuse collection systems comparing one-man with multi-man crews, Los Angeles, June 1968. p. 3-44. These surveys were intended to enable evaluation of: collection time for various crew sizes and collection methods; travel time between collection stops; quantity of refuse/service stop; time and motion, employing motion picture films and television video tape recordings; and number and type of containers at each service stop.


Truitt, M. M., J. C. Liebman, C. W. Kruse. Conclusions and summary. In Terminal report of an investigation of solid waste collection policies, 2 v. Baltimore, The John Hopkins University Department of Environmental Health, Aug. 1968. p. 135-152. The model proving runs gave figures slightly above those actually found by the city but the differences were easily attributable to random number sequences and variations in the real system.


COMPOST AND COMPOSTING


Mercer, W. A., W. W. Rose. Windrow composting of fruit waste solids. *Compost Science*, 9(3):19-21, Autumn 1968. Rice hulls, selected to serve as a dry material, were combined in open windrows with cannery waste and aerated by mechanically turning the compost mass.


Refuse disposal plants for Thailand. Engineer, 226(5879):472, Sept. 27, 1968. Four refuse disposal plants are designed to turn organic refuse into compost while inorganic rejects are incinerated.

DISPOSAL


Disposal problem outweighs judicial technicalities, rules New York Supreme Court. Clean Air News, 2(14):2-3, Apr. 23, 1968. In a case involving suits by two New York towns against a contracting company to prohibit the open burning of trees, stumps, and other debris, the New York Supreme Court ruled that the materials be immediately burned because of the urgency and complexity of the disposal problem.

Disposing of domestic waste biologically. Science Journal, 4(2):21-22, Feb. 1968. A Swedish system, independent of the water and sewer networks, consists of a garbage chute from the kitchen and a toilet which requires no flushing, both of which are connected to a plastic decomposition chamber.


Revelle, R. Pollution and cities. Cambridge, Harvard University, Center for Pollution Studies, Dec. 1966. 22 p. The problems and solutions to the problems of air, water, and land pollution are discussed.


DISPOSAL—COLLEGES AND UNIVERSITIES

Gray, A. C. Introduction and historical review. In Solid waste disposal at State University of New York, Albany campus. Troy, Rensselaer Polytechnic Institute, Aug. 1968. p. 1-3. A study was made under a Public Health Service Training Grant to analyze present methods of refuse collection and disposal on the Albany campus, to investigate all feasible alternate methods, and to make a final recommendation for the best disposal plan for the campus.
Gray, A. C. Existing methods for refuse handling at the State University of New York, Albany Campus. In Solid waste disposal at State University of New York, Albany campus. Troy, Rensselaer Polytechnic Institute, Aug. 1968. p. 4-17. Present and projected amounts of type A and type B refuse generated on campus is revealed.

Gray, A. C. Methods of refuse collection and disposal at other colleges and university campuses. In Solid waste disposal at State University of New York, Albany campus. Troy, Rensselaer Polytechnic Institute, Aug. 1968. p. 18-51. Results of a survey of 60 colleges with a student population of 5,000 or more are presented and tables give general information on the colleges, garbage disposal methods, rubbish disposal methods, and refuse quantities and costs.


DISPOSAL—HOSPITALS

Disposables are dangerous. Pennsylvania Medicine, 71(3):49, Mar. 1968. Methods of disposing of used syringes, needles, drug samples, and other medical supplies are reviewed.

GRINDING


New pulverization machinery by A.B.C. Public Cleansing, 58(5):243-246, May 1968. The machine utilizes a horizontal feed arrangement, a generous feed entry which will enable bulky wastes to be reduced, and the converging track pre-crusher and disintegration principle.

Poole plumps for pulverization. Public Cleansing, 58(7):357-360, July 1968. Poole, England, has a new pulverization plant to produce homogeneous landfill material that requires no covering.
Pulverization—sense or nonsense? Public Cleansing, 58(9):486-489, Sept. 1968. The claim is made that pulverization does not contribute to effective incineration and does not greatly improve a properly run, controlled landfill operation.

Reeves, E. G. Refuse disposal—pulverization. Public Cleansing, 58(4):156-160, Apr. 1968. The part that pulverization can play in the disposal of refuse by sanitary landfill, composting, and incineration is discussed.


INCINERATION


Diamant, R. M. E. Economics of refuse incineration. Air Conditioning, Heating and Ventilating, 65(9):18, Sept. 1968. Experiences with the use of refuse incinerators for district heating indicate that it is not possible to make the sale of heat pay for the operating costs of the incineration plant.


Fränzke, H. H. The designing of incinerators - illustrated by an example of a waste incineration-remote heating plant. Elektrizitätswirtschaft, 67(18):521-7, Aug. 1968. The detailed planning and designing of incinerators is illustrated by the example of the city of Iserloh in West Germany. (Text-German)

Houston orders cleanup: new techniques used. Chemical Engineering, 75(6):96-7, Mar. 11, 1968. An incinerator designed for the treatment of waste oil and the use of refinery waste to nourish a secondary treatment facility are described.
Incineration for small communities—ask Shippensburg. *Pennsylvanian*, 8(3):12,13,39, Mar. 1969. The incinerator, which has a rotating bowl which tumbles and mixes the burning wastes for more efficient burning, is expected to be able to handle 72 tons/day of refuse and to serve 32,000 to 35,000 people.

Incinerator prevents air pollution. *Materials Reclamation Weekly*, 112(25):16, June 22, 1968. The Brulé incinerator is claimed by the British manufacturers to burn anything wet or dry, without smoke, and to be within the limits of the Clean Air Act.


Law, D. K. Direct incineration—aesthetic design of plant. *Public Cleansing*, 58(12):647-655, Dec. 1968. Designs which honestly express the functions of the building will be aesthetically the most satisfactory.

McLean, N. Gas cleaning plant and its application to refuse disposal. *Public Cleansing*, 58(3):106-113, Mar. 1968. Atmospheric pollution regulations in Great Britain with regard to municipal incinerator plants and the main factors influencing the generation of dust in continuous stoker incinerators are considered.

Milan trims garbage costs with power generating unit. *Electrical World*, 170(14):32, Sept. 30, 1968. The city is currently burning 360 to 540 tons of rubbish/day in its first plant, providing about one-third of the city's own electric power needs.

NAPE member designs low-cost incinerator. *National Engineer*, p. A3-9, Jan. 1968. A patent was received on the design of a municipal incinerator that is claimed to be 92 to 97 percent smoke free.


Refuse—the new fuel of the 1980's? *Surveyor Municipal Engineering*, 132(3977):20-21,35, Aug. 24, 1968. A combined refuse incinerator and district heating plant, which will have sufficient thermal output to satisfy the needs of an industrial community of 40,000 is to be built in Nottingham.


**INDUSTRIAL WASTES**

Bader, A. J. Complete waste treatment system designed for new foundry. *Plant Engineering*, 22(8):118-120, Apr. 1968. A complete waste treatment system was designed for an iron castings plant based on information gathered on quality and quantity of anticipated waste and water conservation.


Evanson, A. E. Power or pollution—The use of lumber industry waste for electric power generation. Seattle, Oregon, Cornell, Howland, Hayes, and Merryfield, 1964. 7 p. The use of lumber industry waste for the generation of electric power is suggested as one possible solution for eliminating the air pollution problem from this source.
Fire fighting contractors level mountains of burning coal waste. Construction Methods, 50(3):64-7, Mar. 1968. One contractor extinguished coal waste fires in Pennsylvania with jet streams of water, drag-lines, scrapers, and dozers while another bore horizontal holes in the material, shot it, soaked it with water, and then dozed it away.


Parker, C. D. Food cannery wastes treatment. Food Technology in Australia, 20(3):114-118, Mar. 1968. Treatment facilities are described incorporating the use of an oxidation ditch in the treatment of cannery wastes, the treatment of partially purified lagoon effluents by the oxidation ditch process and the use of anaerobic lagoons to treat fruit cannery wastes at heavy BOD loadings without odor.

Processing waste meat products. Food Processing Marketing, 37(444):345-346, Sept. 1968. A plant has been designed to treat slaughterhouse waste and condemned meat for the production of both purified fat and high grade meal for animal feed by the Centrimeal process.

LITTER

Costs $25,000,000 yearly to remove highway litter. Public Health News, 49(3):47, Mar. 1968. The National Litter Index, compiled from vehicle miles traveled on primary state highways and the annual cost of cleaning up litter from these thoroughfares, stands at 109.6 for 1967.
Last word on disposable bottles. New Scientist, 39(614):532, Sept. 12, 1968. Dr. Samuel Hulbert of Clemson University, South Carolina has been given a grant by the U.S. government to develop his invention of a bottle that disposes of itself after discard by turning into water.

The self-destroying beer bottle. New Scientist, 39(605):63, July 11, 1968. A Swedish company has produced a container made of rigid PVC and paper which, when thrown away, can be decomposed by sunlight and acids in the soil.

MANAGEMENT OF SOLID WASTE SYSTEMS


Ludwig, H. F., R. J. Black. Report on the solid waste problem. ASCE Journal of the Sanitary Engineering Division, 94(SA2):355-370, Apr. 1968. The need for investigation in all areas of solid waste problems is described and management of these problems is discussed.

Per capita waste generation near thirty-five pounds a day. Chemical Engineering News, 46(4):16, Jan. 22, 1968. To handle these wastes, numerous techniques are applied, none of which is completely satisfactory.

Schultz, O. P. Managerial decision making in local government: facility planning for solid waste collection. Cornell Dissertations in Planning, Ithaca, Cornell University, Jan. 1968. 263 p. The purpose of this study is to discover a rationale for facility planning for a solid waste collection system and to devise an operational decision model consistent with the rationale.

RECLAMATION AND UTILIZATION

Does advanced plant waste non-ferrous scrap? Waste Trade World, 112(8): 11, Feb. 24, 1968. It is suggested that non-ferrous metals be recovered from the National Research and Development Corporation sponsored system of producing fertilizer from household waste.

Fly ash waste gains value from new process. Water Pollution Control, 106(11):40, Nov. 1968. Ontario, Canada develops a process to convert fly ash into light weight aggregates for concrete industry.


Harvey, E. H., T. M. Devine. Bark fines removal and recovery system. Pulp and Paper Magazine of Canada, 69(23):71-76, Dec. 6, 1968. A system is described to accomplish the two-fold objective of mechanically recovering a large percentage of bark fines from the wet debarking operation and allowing recirculation and reuse of partially treated effluent to the barking drums.

How to save sulfate: convert it to cash. Chemical Week, 102(3):64-65, Jan. 20, 1968. India uses Nissau-Monsanto process to produce ammonium sulfate from gypsum.

Japanese companies convert leather scraps into a material that can compete with synthetics. Waste Trade Journal, 64(7):7, Feb. 24, 1968. Leather scraps are chemically reduced to a pulp which is sorted for fibers of a certain length and pressed into continuous sheet.

Joint destructor plant scheme. Waste Trade World, 112(7):4, Feb. 17, 1968. A plan for a joint refuse disposal scheme is to be considered by three local councils in Great Britain in order to purchase more sophisticated equipment for separating paper, rags and metals.

Junk yard goldmine? Industrial Research, 10(7):20, July 1968. The Department of Interior’s Bureau of Mines regards trash heaps as valuable sources of uranium, yttrium, aluminum, iron, zinc, copper, lead, and tin.


Secondary fiber users hold first annual conference. *Paper Trade Journal*, 152(45):76, Nov. 4, 1968. Technical sessions at the Secondary Fiber Pulping Conference, held in Dayton, Ohio on October 23-25, were devoted to sludge treatment, recovery and re-use of effluent in the mill, and utilization of sludge.

There's money in those fallen leaves. *Public Cleansing*, 58(9):458, Sept. 1968. Methods are suggested for making mold from collected leaves to be used as humus.

Ultrasonics free fibres from waste paper. *New Scientist*, 38(6):522, June 6, 1968. The ultrasonic 'hydrofibrator' has been designed to remove printing ink, fillers and other non-homogenous material such as plastics and lumps of metal from useful fibers without seriously degrading them.

Used tires reused. *Science News*, 94(14):598, Dec. 1968. Discarded tires are being studied at the Coal Research Center of the U.S. Bureau of Mines in Pittsburgh, where valuable chemicals are being distilled from them as well as gas for heat and power.

The waste-high crisis. *Modern Packaging*, 41(11):102-107, Nov. 1968. Recycling of wastes is viewed as the ultimate answer to the problem either through use of the heat value of solid waste or through re-use of the packaging material itself.


RECLAMATION AND UTILIZATION—ABANDONED AUTOMOBILES


Derrickson, G. F. *Motor vehicle abandonment in U.S. urban areas*. Nature and extent of the problem, and adequacy of present methods of handling it. Washington, U.S. Department of Commerce Business and Defense Services Administration, Mar. 1967. 51 p. Questionnaires were sent to 395 cities as part of a study to provide empirical information on the extent of motor vehicle abandonment in urban areas of the U.S.


REGIONAL AND URBAN STUDIES


Hughes, G. M. Selection of refuse disposal sites in Northeastern Illinois. Environmental Geology Notes 17, Urbana, Ill., Illinois State Geological Survey, Sept. 1967. 26 p. Geologic environments were evaluated in terms of results of studies on refuse disposal and groundwater contamination in dumping sites. [4748]


Ingram, W. T., P. P. Francia. Investigation of existing disposal facilities. In Quad-City solid wastes project. An Interim Report June 1, 1966 to May 31, 1967, Cincinnati, U.S. Department of Health, Education, and Welfare, Public Health Service, Solid Wastes Program, 1968. p. 6(1-10). Private landfills were investigated, six plants were examined and extensive technical, construction, and operating costs data were obtained. [4741]


Jones, Henry and Williams, Engineers. Solid waste study collection and disposal plant. Toledo, Jan. 1967. 103 p. A study of Kalamazoo County, Michigan was undertaken to provide a solid waste disposal plan for the area.

Licking County Regional Planning Commission. A refuse disposal study for the Licking County Region. Regional report 2, Licking County, Ohio, Licking County Regional Planning Commission, Mar. 1967. 89 p. The significant problems of refuse disposal in Licking County, Ohio concern refuse quantity and quality, collection problems, disposal methods and legal and financial difficulties.


Quigley, J. M. Solid waste--a solid problem. Pennsylvanian, 8(3):16, 17, 49, Mar. 1969. The various disposal techniques considered are: open burning, burying, ocean disposal, sanitary landfill, salvaging, composting, pyrolysis, and rail haul to abandoned strip mines.

Zaltzman, R. Oklahoma City-County Health Department. Solid waste disposal countywide study. Preliminary Report, Oklahoma City, C. H. Guernsey and Company Consulting Engineers, 1967. 69 p. The major communities of the Oklahoma County were sampled and a working model was developed and tested, with recommendations and cost estimates made with the findings. [4779]

SAFETY

Van Beek, G. Employee safety in the solid wastes industry. Public Works, 99(12):74, Dec. 1968. A cooperative study established that the injury frequency rate among employees of the solid waste industry is nearly 900 percent greater than the average of all industry in the U.S.; the severity rate is 300 percent greater than that of all industrial employees; private contractors are spending a greater percentage of their gross income on accident costs than they are receiving in profits. [4721]

SANITARY LANDFILL


Bevan, R. E. Notes on the science and practice of the controlled tipping of refuse. London, The Institute of Public Cleansing, 1967. 216 p. The methods of controlled tipping are sometimes complicated and require expert knowledge and experience by a number of specialists as well as diligent attention to the everyday management at the site. [4749]


SLUDGE TREATMENT AND DISPOSAL

Brooks, R. B. Heat treatment for activated sludge. Water and Pollution Control, 67(5):592-601, 1968. One percent solids surplus activated sludge was used to determine the effect of initial solids concentration, temperature, heating time and presence of oxygen; to examine various physical and biological methods for treating the liquor produced; and to evaluate the residual non-biologically degradable compounds.
Coakley, P. Sludge dewatering and disposal. *Institution of Civil Engineers, Proceedings*, 41:623-626, Nov. 1968. Sludge dewatering, the chemical nature of the sludge particle, engineering aspects of treatment plant design, and final disposal of sludge on land are discussed.


Sludge freezing plant. *Journal of Refrigeration*, 11(5):114, May 1968. The new plant, designed to handle 6,000 gallons/24 hour of sludge, will operate on the principle that slow freezing of the sludge causes a breaking down of its colloidal structure, greatly accelerating the precipitation of the insoluble matter in the solution.

Swanwick, J. D., A. M. Bruce, K. G. Vandyke. Inhibition of sludge digestion by synthetic detergents. *Water and Pollution Control*, 67(1):91-99, 1968. The inhibitory effect is examined and experiments dealing with various concentrations of detergents detail the effect of the detergents.

**STORAGE**


**STREET CLEANING**