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1949. The leaching of mineral supplements, e.g. Zn, B, As, in salt blocks is minimized by use of not more than 3% of edible mineral supplements of very limited soly. in water contg. up to 26% salt but sol. in the digestive fluids of animals. A. J. Ganz

Trace halogen salt. Joseph A. Dunn and Frank G. Miller (to General Foods Corp.). U.S. 2,489,759, Nov. 29, 1949. The leaching of added halogen supplement from salt blocks is minimized by use of not more than 3% of edible halogen supplements, e.g. Ca bromobehenate, alk. earth fluoride, dithymol diiodide, of limited soly. in water and brine. A. J. Ganz

Trace metal salt. Joseph A. Dunn and Frank G. Miller (to General Foods Corp.). U.S. 2,489,760, Nov. 29, 1949. The leaching of added metal supplements from salt blocks is minimized by use of not more than 3% of edible metal supplements, e.g. Co, Mn, or basic Cu carbonates, of limited soly. in water and brine. A. J. G.

Trace iron salt. Joseph A. Dunn and Frank G. Miller (to General Foods Corp.). U.S. 2,489,761, Nov. 29, 1949. The leaching of added Fe supplements from salt blocks is minimized by use of not more than 3% of edible Fe compds., e.g. reduced Fe, FeO, $Fe(OH)_2$, and $Fe(OH)_3$, of limited soly. in water and brine. A. J. Ganz

Sulfur salt. Joseph A. Dunn and Frank G. Miller (to General Foods Corp.). U.S. 2,489,762, Nov. 29, 1949. The leaching of added S supplements from salt blocks is minimized by use of not more than 3% of edible S compds., e.g. lazurite, thioprotein, Et thiopalmitate, of limited soly. in water and brine. A. J. Ganz

13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

T. H. CHILTON

Economic and financial development of the chemical process industries. Robert S. Aries and John W. Spence (R. S. Aries & Assocs., New York, N.Y.). *Ind. Eng. Chem.* 42, 936–47(1950).—Economic and financial review of the growth of chem. industry. M. H. Baker

100 chemical process companies—an analysis of their financial records, 1939–1949. Anon. *Ind. Eng. Chem.* 42, 948–73(1950). M. H. Baker

Postwar record good—future bright but—. M. F. Crass, Jr. (Mfg. Chemists' Assoc., Washington, D.C.). *Ind. Eng. Chem.* 42, 974–7(1950).—Chem. production, employment, and prices are related to those of other manufg. industries. M. H. Baker

Basic minerals—production high but reserves cause concern. C. W. Merrill, G. W. Josephson, and T. W. Hunter (U.S. Bur. Mines, Washington, D.C.). *Ind. Eng. Chem.* 42, 978–83(1950).—Production statistics for mineral and mineral fuels, 1939–1949. M. H. Baker

Inorganic chemicals—supply meets demand. Frank Talbot (Natl. Security Resources Board, Washington, D.C.). *Ind. Eng. Chem.* 42, 984–9(1950).—Growth of the industrial inorg. chem. industry, 1939 *vs.* 1947. Total industry cost of fuel, production of individual products, and consumption figures by industry are tabulated. M. H. Baker

Organic chemicals—production and value still expanding. J. H. Hibben (U.S. Tariff Comm., Washington, D.C.). *Ind. Eng. Chem.* 42, 990–7(1950).—Number of establishments, production workers, total wages paid, value of products shipped, 1939 *vs.* 1947, are indicated for org. chemicals, vegetable and animal oils, gum and wood chemicals, drugs, and pharmaceuticals. Production, quantity sold, and value of sales for a group of synthetic org. chemicals described by product and production by classes of plastics and resin materials for 1949 are indicated. Rubber supply and consumption, including exports, turpentine production and rosin production, wood and gum, 1939–1949 are given. M. H. Baker

Chemical specialties—consumer demand continues to grow. F. M. Hoffheins (U.S. Dept. Comm., Washington, D.C.). *Ind. Eng. Chem.* 42, 998–1001(1950).—Number of establishments, production workers, total wages paid, value of products shipped in soap, glycerol; paints, varnishes; insecticides and fungicides; toilet prepns.; essential oils; glue and gelatin; chem. specialties, general; compressed and liquefied gases; printing inks; carbon black; together with the geographical location of the paint, varnish, pigment, and allied product industries; expenditures for plant and equipment in the paint, varnish, pigment, and allied products and soap, glycerol and related product industries, costs of fuel in these industries. M. H. Baker

Chemical exports, imports off from 1947 high. C. C. Concannon (U.S. Dept. Comm., Washington, D.C.). *Ind. Eng. Chem.* 42, 1002–6(1950).—Review of chemicals exported and imported by quantity and value 1939, 1947, 1948, 1949. M. H. Baker

Review of literature on **health hazards of beryllium and its compounds.** G. G. Morgis and J. J. Forbes (U.S. Bur. Mines, Washington, D.C.). *U.S. Bur. Mines, Inform. Circ.* No. 7574, 23 pp.(1950). C. W. Schuck

Studies on aerosols. IX. Enhancement of irritating effects of various substances on the eye, nose, and throat by particulate matter and liquid aerosols in connection with pollution of the atmosphere. Lucien Dautrebande, Roquell Capps, and Ellen Weaver (Stanford Research Inst., Stanford, Calif.). *Arch. intern. pharmacodynamie* 82, 505–28(1950); cf. *C.A.* 44, 1209*g*.—Particulate matter, such as fine carbon black particles, used motor oil (1 to 2 p.p.m.), Diesel oil (0.2 to 0.3 p.p.m.) or NaCl aerosols, is irritating to the human eye, nose, and throat, apart from the presence of gases such as SO_3 and SO_2. These aerosols increase the irritating effect of such gases. Fresh mineral-oil aerosols (300 p.p.m.) were not irritating under the exptl. conditions. These facts are discussed with reference to the "smog" over big cities. M. L. C. Bernheim

Rapid measurement of pollution rate in an atmosphere of dust—application to mines. Edmond Leclerc and André Jorissen (Univ. Liège, Belg.). *Chimie & industrie* 63, 363–8(1950).—Known and original methods for treatment of mine dusts are described. The methods vary with size of dust and speed of air current. A granulometric method of measuring dusts is described as well as the app. There are 2 types of measurement: those relating to total wt. of grains in suspension in an air current, and those concerned with the no. of grains per cc. F. S. Boig

Some results of dust investigation in silicosis research. Hermann Gessner (Eidg. Materialprüfungsanstalt, Zurich, Switz.). *Kolloid-Z.* 115, 143–55(1949).—An address. Alfred M. Pommer

Dust and the fight against silicosis. Pierre Seuillot. *Rev. ind. minerale* 25, 179–94(1945).—Methods of protection are discussed. Michael Fleischer

Mineralogical aspects of pneumoconiosis research. G. Nagelschmidt. *Research* (London) 2, 170–5(1949); *J. Am. Ceram. Soc.* 32, No. 7, *Ceram. Abstracts* 177(1949).—A review of the literature. Three different fibrotic mineralogical groups are distinguished: (1) quartz and other forms of uncombined SiO_2, (2) other silicate minerals with or without quartz, and (3) fibrous silicates, especially asbestos; the first two are discussed in more detail. There appears to be a relation between SiO_2 "soly." and fibrotic reaction. If the soly. is too high, as in silicic acid sols and gels, the material is eliminated too fast to produce fibrosis; if it is too low, as in mixts. of quartz with Al or with siliceous minerals, the fibrotic reaction is retarded. Crystal structure appears to have little effect. Two conditions seem to be necessary: (a) there must be a certain surface capable of releasing SiO_2 to lung fluids and (b) the supply of SiO_2 from this surface must be maintained for a considerable time. There is an optimum size of quartz for each animal. In inhalation, retention in man

decreases from about 80% for 2 μ particles to only about 25% for 0.2 μ particles. 27 references. R. D. H.

Contamination of the atmosphere by sulfur dioxide from mineral piles at the coal mines. D. N. Kalyuzhnyi, S. A. Davydov, L. G. Dukarskaya, and M. B. Aksel'rod. *Gigiena i Sanit.* 1950, No. 5, 19–24.—SO_2 which evolves from the mineral by-product piles from the reactions which take place in such aggregations under the influence of air and moisture (as well as O_2) may reach 2–11 mg./cu. m. proportion in the vicinity of such piles. Pyrites is responsible for the greater fraction of such SO_2. The concn. drops off rapidly with distance but the SO_2 may be still detectable at several hundred meters from the site. The location of living quarters, etc. must be governed by these considerations. G. M. Kosolapoff

Industrial safety gloves. Brit. Standards Inst., London, S.W.1. *Brit. Standard* 1651:1950. 36 pp. 4s.—A description of 17 types of safety gloves, made of leather rubber, felt, polyvinyl chloride, and cotton, and the purposes for which they are used. The size, materials, and manuf. of each are specified. Methods of test and recommendations for storage of rubber gloves are given. L. M. M.

Organic cation-exchangers. F. G. Prokhorov and M. G. Korneyeva. *Izvest. VTI (Vsesoyuz. Teplotekh. Inst.)* 16, No. 6, 1–6(1947); *Chem. Zentr.* (Russian Zone Ed.) 1948, I, 1046.—The manuf., compn., and properties of Wofatite P, C, D, K, and KS, Zeocarb, Amberlith 1-R-100, and the Russian Sulfocoals (brown or mineral coal treated with oleum contg. 20% SO_3) are reported. Wofatite P showed the greatest resistance to hot, alk. waters. The Sulfocoals were satisfactory in acid media. M. G. Moore

Peanut protein for industrial utilization. Jett C. Arthur, Jr. (Southern Regional Research Lab., New Orleans, La.). *J. Southern Research* 1, No. 4, 6–14 (1949); cf. *C.A.* 44, 1210*f*.—A literature survey. 136 references. J. W. Cole

Random noise in dielectric materials. R. F. Boyer (Dow Chem. Co., Midland, Mich.). *J. Applied Phys.* 21, 469–77(1950).—Random fluctuation currents occur in moist thin films of dielectrics under potential gradients lower than those causing breakdown. Moisture vapor permeability increases with the d.-c. The fluctuations, about 1% of the steady d.c., are greater the more polar the nature of the polymer and the higher its moisture content. H. P. Knauss

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Utilization of chitin—prepn. of tartaric acid from glucosamine (Sumiki) 10. Theoretical bases of chemistry of vinyl ethers. I. Oxonium properties of vinyl alkyl ethers [lacrimators] (Shostakovskiĭ) 10. Electrostatic precipitator for continuous sampling of H_2SO_4 aerosols and other air-borne particulate electrolytes (Schadt) 1.

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Mironneau, L.: Isolants et technique de l'isolation (Encyclopédie du froid). Paris: J. B. Ballière. 1950. 292 pp. Fr. 1200. Reviewed in *Chimie & industrie* 63, 264(1950).

Weingaertner, E., and Winnacker, K.: Chemische Technologie. The Hague: Martinus Nijhoff. 1949. 600 pp. DM. 38.

Canadian Trade Index. 1950 ed. Toronto: Can. Mfg's. Assoc. 1950. 1100 pp. $7.50. Reviewed in *Can. Chem. Process Inds.* 34, 576(1950).

Separation of preferred fractions from apparently homogeneous gel particles. Louis D. Rampino (to Shell Development Co.). U.S. 2,508,867, May 23, 1950. Improved gels, usable as *catalysts, catalyst carriers, contact agents*, and *adsorbents*, are obtained from gels of oxides of Si, Al, Zr, Mg, Sn, Th, Cr, and Mo, prepd. by the usual methods, by subjecting those gels in the form of granules to a developing treatment. In an example, silica gel, passed through 6 mesh and retained on 14 mesh screen is exposed to isopropyl benzene (I) vapor at 500°F. for 1 hr. Small quantities of decompd. I convert the gel particles into a heterogeneous mixt. of black, gray, and light particles which after sepn. can be returned to their original form with no difference of available surface, av. pore size, or d., by burning out the carbonaceous deposits. But if the fractions are treated individually with I, the same differentiation in color shows up as before. Measurements of the rate of adsorption of liquid I showed a difference in the different fractions. Other developing methods comprise treatment with solns. contg. coloring matter; treatment with an adsorbable liquid and fractioning by elutriation methods; treatment with materials that alter the elec. properties (and sepn. of the treated particles by electrostatic methods) or magnetic properties. K. Fox

Catalysts. Imperial Chemical Industries Ltd. Brit. 638,031, May 31, 1950. V catalysts may be prepd. in a 3-stage process, which comprises: (1) grinding to a powder a mixt. comprising silica gel impregnated with a V compd. which has been baked in the presence of acid with finely divided S; (2) adding water, kneading, and shaping the wet mixt. into predetd. forms by pelleting, molding, or extusion; and (3) drying at a temp. not over 100° and removing the S by ignition or subliming at about 500°. In an example, 2500 g. of dried silica gel was finely ground, and 790 ml. K vanadate soln. (K_2O 2 and V_2O_5 2.5 parts per 10 parts water) was added, followed by 73 ml. H_2SO_4.-H_2O. Water was added to impart a doughlike consistency to the mixt. The latter was formed into pieces and finally baked for several hrs. at about 500°. To 2250 g. of baked material were added 850 g. ground S and 1500–2000 g. water, and the mixt. was ground. The cord formed by extrusion of the paste was dried and roasted at about 500°. The process is especially suitable for reworking spent V catalyst to produce fresh material for use as a catalyst. P. J. Wilson, Jr.

Vanadium pentoxide catalysts. Wm. C. Cooper (to Pittsburgh Coke and Chemical Co.). U.S. 2,510,803, June 6, 1950. A V_2O_5 catalyst for vapor-phase oxidation of $C_{10}H_8$ to *phthalic anhydride* and C_4H_6 to *maleic anhydride* is prepd. by coating an inert carrier with V_2O_5 from a colloidal soln. under conditions such that the water is evapd. as fast as the soln. is brought into contact with the carrier particles. The catalytic coating so produced is more adherent and of greater and more uniform catalytic activity than that of previous catalysts. E.g., 60 g. of NH_4 vanadate is heated cautiously to drive off NH_3 and reoxidize any reduced V compds. The mass is then heated to 850°, and the molten material is slowly poured with vigorous agitation into 3000 ml. of distd. H_2O having a temp. of 20°. The soln. is filtered to give a stable, deep reddish brown soln. contg. about 1.5% V_2O_5. Then 100 g. of 4–8 mesh fused Al_2O_3 is placed in a 500-ml. flask rotating at 10–12 r.p.m. The colloidal soln. is added dropwise while the water in the soln. is evapd. by application of heat to the bottom of the flask, in such a manner that no liquid is accumulated on the bottom of the flask. When 300 ml. of soln. has been added, the operation is complete. The Al_2O_3 particles are coated with a lustrous, gun-metal blue layer of V_2O_5 amounting to about 4% of the total product. Other examples include prepn. of a catalyst for a fluidized catalytic process. The concn. of colloidal soln. may be 0.1–5% V_2O_5, preferably 1–3%. The color of the catalyst changes with the extent of drying of the coat, from gun-metal blue to red brown and finally to orange or yellow. It is preferable to stop the heating before reaching orange or yellow. Other methods of prepn. of the colloidal soln. may be used, as well as other colloidal materials in addn. to V_2O_5. Edward S. Hanson

Solid adsorbent. N. N. Das Gupta. Indian 39,855, Nov. 9, 1949. A solid product which may be used for removing H_2S from coal gas is obtained from blast-furnace gas by lowering the velocity of the blast-furnace gas, when the first crop of the dust is obtained, then washing the blast-furnace gas with water, decanting, and filtering, when the second crop of the dust is obtained, and finally passing the blast-furnace gas through electrofilters to obtain the third crop of the dust. The dust is then washed.