

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
National Institute for
Occupational Safety & Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati OH 45226

Your facility has been selected, along with more than 5,000 other business establishments of all sizes and types across the nation, to be included in the National Occupational Exposure Survey (NOES) being conducted by the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control, U. S. Public Health Service, Department of Health and Human Services.

As you may know, this survey, which is authorized by the Occupational Safety and Health Act of 1970, [see 29 U.S.C. 669(a)], is a special research project designed to obtain basic information about health and safety practices within workplaces, and also to determine the exposure of workers to chemical, physical, and biological agents (or materials) which occur on a routine or frequent basis. The materials or agents to be considered include those known to be of a hazardous nature, as well as those which may not presently be considered hazardous. NIOSH regards voluntary cooperation to be essential to the effective conduct of this Survey, but reserves the right to exercise its general authority under Section 20(a) and (b) of Public Law 91-596 to enter facilities for purposes of conducting research. NIOSH is required by statute (29 U.S.C. 664) and Department regulation [45 CFR 5.71(c)] to protect the confidentiality of trade secrets. NIOSH retains survey data on individual plants under a serial number rather than plant name and subsequently destroys the link to plant name. No information on an individual plant would therefore be available for release.

The survey is a research effort and is not to be used for enforcement purposes. Instead, the compiled information will be used for various health and safety functions such as setting priorities for standards development and research activities, and for providing data to assist in determining the effectiveness of health and safety programs.

One of our specially trained surveyors will be visiting your facility sometime in the near future. He will request to meet with a key official so that a questionnaire can be completed. Following this, he will need to conduct a complete tour of all work areas to categorize and enumerate potential exposures to any chemical or physical agents. Although the time required will depend upon the nature of activities occurring in each establishment, the surveyor will attempt to complete the survey as rapidly as possible to minimize interference with normal workday routines.

NIOSH will be conducting its survey according to regulations set forth in 42 CFR, Part 85a. Thus, a representative of the employees' union (if any) will be permitted to be present during the NIOSH meeting with the company official and the plant tour if the representative so requests, and if NIOSH determines that this will aid the research investigation. Generally, NIOSH has found that participation by labor has aided its research investigation.

We would like to thank you in advance for your cooperation in this important health and safety endeavor.

Sincerely yours,

A handwritten signature in black ink, appearing to read "J. Donald Millar". The signature is written in a cursive, flowing style.

J. Donald Millar, M.D.
Assistant Surgeon General
Director

APPENDIX B. LIST OF IN-SCOPE FOUR-DIGIT SIC

CODES AND NARRATIVE DESCRIPTIONS

AGRICULTURAL SERVICES (soil preparation, crop services, animal services, etc.)

Crop preparation services for market, except cotton ginning	0723
Cotton ginning	0724
Veterinary services for animal specialities	0742
Lawn and garden services	0782
Ornamental shrub and tree services	0783

CRUDE PETROLEUM AND NATURAL GAS

Crude petroleum and natural gas	1311
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NATURAL GAS LIQUIDS

Natural gas liquids	1321
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OIL AND GAS FIELD SERVICES

Drilling oil and gas wells	1381
Oil and gas field exploration services	1382
Oil and gas field services, nec*	1389

GENERAL BUILDING CONTRACTING (residential and nonresidential buildings, etc.)

General contractors - single family homes	1521
General contractors - residential buildings, other than single family	1522
Operative builders	1531
General contractors - industrial buildings and warehouses	1541
General contractors - nonresidential buildings, other than industrial buildings and warehouses	1542

HEAVY CONSTRUCTION CONTRACTING (highways, bridges, sewer lines, etc.)

Highway and street construction, except elevated highways	1611
Bridge, tunnel, and elevated highway construction	1622
Water, sewer, pipeline, communication and power line construction	1623
Heavy construction, nec	1629

SPECIAL TRADE CONTRACTING (plumbing, painting, electrical work, etc.)

Plumbing, heating (except electric), and air conditioning	1711
Painting, paper hanging, and decorating	1721
Electrical work	1731
Masonry, stone setting, and other stone work	1741
Plastering, drywall, acoustical and insulation work	1742
Terrazzo, tile, marble and mosaic work	1743

* nec = not elsewhere classified

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Carpentering	1751
Floor laying and other floor work, nec	1752
Roofing and sheet metal work	1761
Concrete work	1771
Water well drilling	1781
Structural steel erection	1791
Glass and glazing work	1793
Excavating and foundation work	1794
Wrecking and demolition work	1795
Installation or erection of building equipment, nec	1796
Special trade contractors, nec	1799

FOOD AND KINDRED PRODUCTS (meat, fruit, grain mill products, etc.)

Meat packing plants	2011
Sausages and other prepared meat products	2013
Poultry and egg processing	2017
Creamery butter	2021
Cheese, natural and processed	2022
Condensed and evaporated milk	2023
Ice cream and frozen desserts	2024
Fluid milk	2026
Canned specialties	2032
Canned fruits, vegetables, preserves, jams and jellies	2033
Dried and dehydrated fruits, vegetables, and soup mixes	2034
Pickled fruits and vegetables, vegetable sauces and seasonings, and salad dressings	2035
Frozen fruits, fruit juices and vegetables	2037
Frozen specialties	2038
Flour and other grain mill products	2041
Cereal breakfast foods	2043
Rice milling	2044
Blended and prepared flour	2045
Wet corn milling	2046
Dog, cat and other pet food	2047
Prepared feeds and feed ingredients for animals and fowls, nec	2048
Bread and other bakery products, except cookies and crackers	2051
Cookies and crackers	2052
Cane sugar, except refining only	2061
Cane sugar refining	2062
Beet sugar	2063
Candy and other confectionery products	2065
Chocolate and cocoa products	2066
Chewing gum	2067
Cottonseed oil mills	2074
Soybean oil mills	2075
Vegetable oil mills, except corn, cottonseed, and soybean	2076
Animal and marine fats and oils	2077
Shortening, table oils, margarine and other edible fats and oils, nec	2079

**Appendix B. List of In-Scope Four-Digit SIC
Codes and Narrative Descriptions (Cont.)**

Malt beverages	2082
Malt	2083
Wines, brandy, and brandy spirits	2084
Distilled, rectified, and blended liquors	2085
Bottled and canned soft drinks and carbonated waters	2086
Flavoring extracts and flavoring syrups, nec	2087
Canned and cured fish and seafoods	2091
Fresh or frozen packaged fish and seafoods	2092
Roasted coffee	2095
Manufactured ice	2097
Macaroni, spaghetti, vermicelli, and noodles	2098
Food preparations, nec	2099
 TOBACCO MANUFACTURING (cigarettes, cigars, etc.)	
Cigarettes	2111
Cigars	2121
Tobacco (chewing and smoking) and snuff	2131
Tobacco stemming and redrying	2141
 TEXTILE MILL PRODUCTS (weaving mills, knitting mills, yarn mills, carpets and rugs, etc.)	
Broad woven fabric mills, cotton	2211
Broad woven fabric mills, man-made fiber and silk	2221
Broad woven fabric mills, wool (including dyeing and finishing)	2231
Narrow fabrics and other smallwares mills: cotton, wool, silk, and man-made fiber	2241
Women's full length and knee-length hosiery	2251
Hosiery, except women's full length and knee-length hosiery	2252
Knit outerwear mills	2253
Knit underwear mills	2254
Circular knit fabric mills	2257
Warp knit fabric mills	2258
Knitting mills, nec	2259
Finishers of broad woven fabrics of cotton	2261
Woven carpets and rugs	2271
Tufted carpets and rugs	2272
Carpets and rugs, nec	2279
Yarn spinning mills: cotton, man-made fibers and silk	2281
Yarn texturizing, throwing, twisting and winding mills, cotton, man-made fibers and silk	2282
Yarn mills, wool, including carpet and rug yarn	2283
Thread mills	2284
Felt goods, except woven felts and hats	2291
Lace goods	2292
Paddings and upholstery filling	2293
Processed waste and recovered fibers and flock	2294
Coated fabrics, not rubberized	2295
Tire cord and fabric	2296

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Nonwoven fabrics	2297
Cordage and twine	2298
Textile goods, nec	2299
 APPAREL AND OTHER TEXTILE PRODUCTS (men's, women's outerwear, and accessories, home furnishers, etc.)	
Men's, youths', and boys' suits, coats and overcoats	2311
Men's, youths', and boys' shirts (except work shirts) and nightwear	2321
Men's, youths', and boys' underwear	2322
Men's, youths', and boys' neckwear	2323
Men's, youths', and boys' separate trousers	2327
Men's, youths', and boys' work clothing	2328
Men's, youths', and boys' clothing, nec	2329
Women's, misses', and juniors' blouses, waists, and shirts	2331
Women's, misses', and juniors' dresses	2335
Women's, misses', and juniors' suits, skirts, and coats	2337
Women's, misses', and juniors' outerwear, nec	2339
Women's, misses', children's and infants' underwear and nightwear	2341
Brassieres, girdles, and allied garments	2342
Millinery	2351
Hats and caps, except millinery	2352
Girls', children's, and infants' dresses, blouses, waists, and shirts	2361
Girls', children's, and infants' coats and suits	2363
Girls', children's, and infants' outerwear, nec	2369
Fur goods	2371
Dress and work gloves, except knit and all leather	2381
Robes and dressing gowns	2384
Raincoats and other waterproof outer garments	2385
Leather and sheep lined clothing	2386
Apparel belts	2387
Apparel and accessories, nec	2389
Curtains and draperies	2391
House furnishings, except curtains and draperies	2392
Textile bags	2393
Canvas and related products	2394
Pleating, decorative and novelty stitching, and tucking for the trade	2395
Automotive trimmings, apparel findings, and related products	2396
Schiffli machine embroideries	2397
Fabricated textile products, nec	2399
 LUMBER AND WOOD PRODUCTS (sawmills, millwork, wood containers, etc.)	
Logging camps and logging contractors	2411
Sawmills and planing mills, general	2421
Hardwood dimension and flooring mills	2426

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Special product sawmills, nec	2429
Millwork	2431
Wood kitchen cabinets	2434
Hardwood veneer and plywood	2435
Softwood veneer and plywood	2436
Structural wood members, nec	2439
Nailed and lock corner wood boxes and shook	2441
Wood pallets and skids	2448
Wood containers, nec	2449
Mobile homes	2451
Prefabricated wood buildings and components	2452
Wood preserving	2491
Particleboard	2492
Wood products, nec	2499
FURNITURE AND FIXTURES (household, office furniture, partitions, etc.)	
Wood household furniture, except upholstered	2511
Wood household furniture, upholstered	2512
Metal household furniture	2514
Mattresses and bedsprings	2515
Wood television, radio, phonograph, and sewing machine cabinets	2517
Household furniture, nec	2519
Wood office furniture	2521
Metal office furniture	2522
Public building and related furniture	2531
Wood partitions, shelving, lockers, and office and store fixtures	2541
Drapery hardware and window blinds and shades	2591
Furniture and fixtures, nec	2599
PAPER AND ALLIED PRODUCTS (paper, pulp mills, paperboard boxes, etc.)	
Pulp mills	2611
Paper mills, except building paper mills	2621
Paperboard mills	2631
Paper coating and glazing	2641
Envelopes	2642
Bags, except textile bags	2643
Die-cut paper and paperboard and cardboard	2645
Pressed and molded pulp goods	2646
Sanitary paper products	2647
Stationery, tablets and related products	2648
Converted paper and paperboard products, nec	2649
Folding paperboard boxes	2651
Set-up paperboard boxes	2652
Corrugated and solid fiber boxes	2653
Sanitary food containers	2654
Fiber cans, tubes, drums, and similar products	2655
Building paper and building board mills	2661

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

PRINTING AND PUBLISHING (newspapers, books, periodicals, greeting cards, office forms, etc.)

Newspapers: publishing, publishing and printing	2711
Periodicals: publishing, publishing and printing	2721
Book printing	2732
Miscellaneous publishing	2741
Commercial printing, letterpress and screen	2751
Commercial printing, lithograph	2752
Engraving and plate printing	2753
Commercial printing, gravure	2754
Manifold business forms	2761
Greeting card publishing	2771
Blankbooks, looseleaf binders and devices	2782
Bookbinding and related work	2799
Typesetting	2791
Photoengraving	2793
Electrotyping and stereotyping	2794
Lithographic platemaking and related services	2795

CHEMICALS AND ALLIED PRODUCTS (drugs, toiletries, paints, plastics and synthetics, etc.)

Alkalies and chlorine	2812
Industrial gases	2813
Inorganic pigments	2816
Industrial inorganic chemicals, nec	2819
Plastics materials, synthetic resins, and nonvulcanizable elastomers	2821
Synthetic rubber (vulcanizable elastomers)	2822
Cellulosic man-made fibers	2823
Synthetic organic fibers, except cellulosic	2824
Biologic products	2831
Medicinal chemicals and botanical products	2833
Pharmaceutical preparations	2834
Soap and other detergents, except specialty cleaners	2841
Specialty cleaning, polishing, and sanitation preparations	2842
Surface active agents, finishing agents, sulfonated oils and assistants	2843
Perfumes cosmetics, and other toilet preparations	2844
Paints, varnishes, lacquers, enamels, and allied products	2851
Gum and wood chemicals	2861
Cyclic (coal tar) crudes, and cyclic intermediates, dyes, and organic pigments, color lakes and toners	2865
Industrial organic chemicals, nec	2869
Nitrogenous fertilizers	2873
Phosphatic fertilizers	2874
Fertilizers, mixing only	2875
Pesticides and agricultural chemicals, nec	2879
Adhesives and sealants	2891

**Appendix B. List of In-Scope Four-Digit SIC
Codes and Narrative Descriptions (Cont.)**

Explosives	2892
Printing ink	2893
Carbon black	2895
Chemicals and chemical preparations, nec	2899
PETROLEUM AND COAL PRODUCTS (petroleum refining, lubricating oils, etc.)	
Petroleum refining	2911
Paving mixtures and blocks	2951
Asphalt felts and coatings	2952
Lubricating oils and greases	2992
Products of petroleum and coal, nec	2999
RUBBER AND MISCELLANEOUS PRODUCTS (tires, rubber base products, etc.)	
Tires and inner tubes	3011
Rubber and plastics footwear	3021
Reclaimed rubber	3031
Rubber and plastics hose and belting	3041
Fabricated rubber products, nec	3069
Miscellaneous plastics products	3079
LEATHER AND LEATHER PRODUCTS (leather footwear, luggage, etc.)	
Leather tanning and finishing	3111
Boot and shoe cut stock and findings	3131
House slippers	3142
Men's footwear, except athletic	3143
Women's footwear, except athletic	3144
Footwear, except rubber, nec	3149
Leather gloves and mittens	3151
Luggage	3161
Women's handbags and purses	3171
Personal leather goods, except women's handbags and purses	3172
Leather goods, nec	3199
STONE, CLAY AND GLASS PRODUCTS (glass, cement, pottery, abrasives, etc.)	
Flat glass	3211
Glass containers	3221
Pressed and blown glass and glassware, nec	3229
Glass products, made of purchased glass	3231
Cement, hydraulic	3241
Brick and structural clay tile	3251
Ceramic wall and floor tile	3253
Clay refractories	3255
Structural clay products, nec	3259
Vitreous china plumbing fixtures and china and earthenware fittings and bathroom accessories	3261

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Vitreous china table and kitchen articles	3262
Fine earthenware (whiteware) table and kitchen articles	3263
Porcelain electrical supplies	3264
Pottery products, nec	3269
Concrete block and brick	3271
Concrete products, except block and brick	3272
Ready-mixed concrete	3273
Lime	3274
Gypsum products	3275
Cut stone and stone products	3281
Abrasive products	3291
Asbestos products	3292
Gaskets, packing, and sealing devices	3293
Minerals and earths, ground or otherwise treated	3295
Mineral wood	3296
Nonclay refractories	3297
Nonmetallic mineral products, nec	3299
PRIMARY METAL INDUSTRIES (steel mills, foundries, primary nonferrous metals, etc.)	
Blast furnaces (including coke ovens), steel works, and rolling mills	3312
Electrometallurgical products	3313
Steel wire drawing and steel nails and spikes	3315
Cold rolled steel sheet, strip and bars	3316
Steel pipe and tubes	3317
Gray iron foundries	3321
Malleable iron foundries	3322
Steel investment foundries	3324
Steel foundries, nec	3325
Primary smelting and refining of copper	3331
Primary smelting and refining of lead	3332
Primary smelting and refining of zinc	3333
Primary production of aluminum	3334
Primary smelting and refining of nonferrous metals, nec	3339
Secondary smelting and refining of nonferrous metals	3341
Rolling, drawing, and extruding of copper	3351
Aluminum sheet, plate, and foil	3353
Aluminum extruded products	3354
Aluminum rolling and drawing, nec	3355
Rolling, drawing, and extruding of nonferrous metals, except copper and aluminum	3356
Drawing and insulating of nonferrous wire	3357
Aluminum foundries (castings)	3361
Brass, bronze, copper, copper base alloy foundries (castings)	3362
Nonferrous foundries (castings), nec	3369
Metal heat treating	3398
Primary metal products, nec	3399

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

FABRICATED METAL PRODUCTS (metal cans, cutlery, structural metal work, hardware, etc.)

Metal cans	3411
Metal shipping barrels, drums, kegs, and pails	3412
Cutlery	3421
Hand and edge tools, except machine tools and hand saws	3423
Hand saws and saw blades	3425
Hardware, nec	3429
Enameled iron and metal sanitary ware	3431
Plumbing fixture fittings and trim (brass goods)	3432
Heating equipment, except electric and warm air furnaces	3433
Fabricated structural metal	3441
Metal doors, sash, frames, molding and trim	3442
Fabricated plate work (boiler shops)	3443
Sheet metal work	3444
Architectural and ornamental metal work	3446
Prefabricated metal buildings and components	3448
Miscellaneous metal work	3449
Screw machine products	3451
Bolts, nuts, screws, rivets, and washers	3452
Iron and steel forgings	3462
Nonferrous forgings	3463
Automotive stampings	3465
Crowns and closures	3466
Metal stampings, nec	3469
Electroplating, plating, polishing, anodizing and coloring	3471
Coating, engraving and allied services, nec	3479
Small arms ammunition	3482
Ammunition, except for small arms, nec	3483
Small arms	3484
Ordnance and accessories, nec	3489
Steel springs, except wire	3493
Valves and pipe fittings, except plumbers' brass goods	3494
Wire springs	3495
Miscellaneous fabricated wire products	3496
Metal foil and leaf	3497
Fabricated pipe and fabricated pipe fittings	3498
Fabricated metal products, nec	3499

MACHINERY, EXCEPT ELECTRICAL (engines, farm and industrial machinery, metal work machinery, etc.)

Steam, gas, and hydraulic turbines and turbine generator set units	3511
Internal combustion engines, nec	3519
Farm machinery and equipment	3523
Garden tractors and lawn and garden equipment	3524
Construction machinery and equipment	3531
Mining machinery and equipment, except oil field machinery and equipment	3532

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Oil field machinery and equipment	3533
Elevators and moving stairways	3534
Conveyors and conveying equipment	3535
Hoists, industrial cranes, and monorail systems	3536
Industrial trucks, tractors, trailers, and stackers	3537
Machine tools, metal cutting types	3541
Machine tools, metal forming types	3542
Special dies and tools, die sets, jigs and fixtures, and industrial molds	3544
Machine tool accessories and measuring devices	3545
Power driven hand tools	3546
Rolling mill machinery and equipment	3547
Metalworking machinery, nec	3549
Food products machinery	3551
Textile machinery	3552
Woodworking machinery	3553
Paper industries machinery	3554
Printing trades machinery and equipment	3555
Special industry machinery, nec	3559
Pumps and pumping equipment	3561
Ball and roller bearings	3562
Air and gas compressors	3563
Blowers and exhaust and ventilation fans	3564
Industrial patterns	3565
Speed changer, industrial high speed drives, and gears	3566
Industrial process furnaces and ovens	3567
Mechanical power transmission equipment, nec	3569
Typewriters	3572
Electronic computing equipment	3573
Calculating and accounting machines, except electronic computing equipment	3574
Scales and balances, except laboratory	3576
Office machines, nec	3579
Automatic merchandising machines	3581
Commercial laundry, dry cleaning, and pressing machines	3582
Air conditioning and warm air heating equipment and commercial and industrial refrigeration equipment	3585
Measuring and dispensing pumps	3586
Service industry machines, nec	3589
Carburetors, pistons, piston rings, and valves	3592
Machinery, except electrical, nec	3599
ELECTRIC AND ELECTRONIC EQUIPMENT (electrical industrial apparatus, household appliances, etc.)	
Power, distribution, and specialty transformers	3612
Switchgear and switchboard apparatus	3613
Motors and generators	3621
Industrial controls	3622
Welding apparatus, electric	3623

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Carbon and graphite products	3624
Electrical industrial apparatus, nec	3629
Household cooking equipment	3631
Household refrigerators and home and farm freezers	3632
Household laundry equipment	3633
Electric housewares and fans	3634
Household vacuum cleaners	3635
Sewing machines	3636
Household appliances, nec	3639
Electric lamps	3641
Current-carrying wiring devices	3643
Noncurrent-carrying wiring devices	3644
Residential electric lighting fixtures	3645
Commercial, industrial, and institutional electric lighting fixtures	3646
Vehicular lighting equipment	3647
Lighting equipment, nec	3648
Radio and television receiving sets, except communication types	3651
Phonograph records and pre-recorded magnetic tape	3652
Telephone and telegraph apparatus	3661
Radio and television transmitting, signaling, and detection equipment and apparatus	3662
Radio and television receiving type electron tubes except cathode ray	3671
Cathode ray television picture tubes	3672
Transmitting, industrial, and special purpose electron tubes	3673
Semiconductors and related devices	3674
Electronic capacitors	3675
Resistors, for electronic applications	3676
Electronic coils, transformers and other inductors	3677
Storage batteries	3691
Primary batteries, dry and wet	3692
Radiographic X-ray, fluoroscopic X-ray, therapeutic X-ray, and other X-ray apparatus and tubes; electromedical and electro-therapeutic apparatus	3693
Electrical equipment for internal combustion engines	3694
Electrical machinery, equipment, and supplies, nec	3699
TRANSPORTATION EQUIPMENT (motor vehicles, aircraft, ships, also parts, etc.)	
Motor vehicles and passenger car bodies	3711
Truck and bus bodies	3713
Motor vehicle parts and accessories	3714
Truck trailers	3715
Aircraft	3721
Aircraft engines and engine parts	3724
Ship building and repairing	3731
Boat building and repairing	3732
Railroad equipment	3743

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Motorcycles, bicycles, and parts	3751
Guided missiles and space vehicles	3761
Guided missile and space vehicle propulsion units and propulsion unit parts	3764
Guided missile and space vehicle parts and auxiliary equipment, nec	3769
Travel trailers and campers	3792
Tanks and tank components	3795
Transportation equipment, nec	3799

INSTRUMENTS AND RELATED PRODUCTS (optical, medical and scientific instruments, watches and clocks, etc.)

Engineering, laboratory, scientific, and research instruments and associated equipment	3811
Mechanical measuring instruments *(SIC code not listed in manual)	*3821
Automatic controls for regulating residential and commercial environments and appliances	3822
Industrial instruments for measurement, display and control of process variables; and related products	3823
Totalizing fluid meters and counting devices	3824
Instruments for measuring and testing of electricity and electrical signals	3825
Measuring and controlling devices, nec	3829
Optical instruments and lenses	3832
Surgical and medical instruments and apparatus	3841
Orthopedic, prosthetic, and surgical appliances and supplies	3842
Dental equipment and supplies	3843
Ophthalmic goods	3851
Photographic equipment and supplies	3861
Watches, clocks, clockwork operated devices, and parts	3873

OTHER MANUFACTURING INDUSTRIES (jewelry, musical instruments, pens, etc.)

Jewelry, precious metal	3911
Silverware, plated ware, and stainless steel ware	3914
Jewelers' findings and materials, and lapidary work	3915
Musical instruments	3931
Dolls	3942
Games, toys and childrens' vehicles; except dolls and bicycles	3944
Sporting and athletic goods, nec	3949
Pens, mechanical pencils, and parts	3951
Lead pencils, crayons, and artists' materials	3952
Marking devices	3953
Carbon paper and inked ribbons	3955
Costume jewelry and costume novelties, except precious metal	3961
Feathers, plumes, and artificial trees and flowers	3962
Buttons	3963
Needles, pins, hooks and eyes, and similar notions	3964

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Brooms and brushes	3991
Signs and advertising displays	3993
Burial caskets	3995
Linoleum, asphalted-felt base, and other hard surface floor coverings, nec	3996
Manufacturing industries, nec	3999
RAILROAD TRANSPORTATION (railroads, terminals, etc.)	
Switching and terminal establishments	4013
LOCAL AND SUBURBAN PASSENGER TRANSPORTATION (bus, rail or subway, etc.)	
Local and suburban transit	4111
Local passenger transportation, nec	4119
Taxicabs	4121
Schoolbuses	4151
Terminal and joint terminal maintenance facilities for motor vehicle passenger transportation	4171
Maintenance and service facilities for motor vehicle passenger transportation	4172
TRUCKING AND WAREHOUSING (trucking, public warehousing, etc.)	
Local trucking without storage	4212
Local trucking with storage	4214
Farm product warehousing and storage	4221
Refrigerated warehousing	4222
Household goods warehousing and storage	4224
General warehousing and storage	4225
Special warehousing and storage, nec	4226
Terminal and joint terminal maintenance facilities for motor freight transportation	4231
WATER TRANSPORTATION (deep sea, coastal, river and canal, ferries, etc.)	
Deep sea foreign transportation	4411
Transportation to and between noncontiguous territories	4421
Coastwise transportation	4422
Intercoastal transportation	4423
Great lakes - St. Lawrence seaway transportation	4431
Transportation on rivers and canals	4441
Ferries	4452
Lighterage	4453
Towing and tugboat service	4454
Local water transportation, nec	4459
Marine cargo handling	4463
Canal operation	4464
Water transportation services, nec	4469

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

TRANSPORTATION BY AIR (airlines, airports, etc.)

Air transportation, certified carriers	4511
Air transportation, noncertified carriers	4521
Airports and flying fields	4582
Airport terminal services	4583

PIPELINES, EXCEPT NATURAL GAS (crude petroleum, pipelines, refined petroleum, etc.)

Crude petroleum pipe lines	4612
Refined petroleum pipe lines	4613
Pipe lines, nec	4619

TRANSPORTATION SERVICES (freight forwarding, travel agencies, etc.)

Rental of railroad cars with care of lading	4742
Inspection and weighting services connected with transportation	4782
Packing and crating	4783
Fixed facilities for handling motor vehicle transportation, nec	4784
Services incidental to transportation, nec	4789

COMMUNICATION (telephone communication, radio and television broadcasting, etc.)

Telephone communication (wire or radio)	4811
Telegraph communication (wire or radio)	4821
Radio broadcasting	4832
Television broadcasting	4833
Communication services, nec	4899

ELECTRIC, GAS AND SANITARY SERVICES (electrical generation and distribution, gas transmission and distribution, sewage systems, etc.)

Electric services	4911
Natural gas transmission	4922
Natural gas transmission and distribution	4923
Natural gas distribution	4924
Mixed, manufactured or liquefied petroleum gas production and/or distribution	4925
Electric and other services combined	4931
Gas and other services combined	4932
Combination utilities, nec	4939
Water supply	4941
Sewerage systems	4952
Refuse systems	4953
Sanitary services, nec	4959
Steam supply	4961
Irrigation systems	4971

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

WHOLESALE TRADE, DURABLE GOODS (motor vehicles and parts, construction materials and supplies, furniture, electric appliances etc.)

Automobiles and other motor vehicles	5012
Automotive parts and supplies	5013
Tires and tubes	5014
Lumber, plywood and millwork	5031
Construction materials, nec	5039
Metal service centers and offices	5051
Coal and other minerals and ores	5052
Scrap and waste materials	5093

WHOLESALE TRADE, NONDURABLE GOODS (paper products, food and beverage products, drugs, apparel, etc.)

Chemicals and allied products	5161
Petroleum bulk stations and terminals	5171
Petroleum and petroleum products wholesalers, except bulk stations and terminals	5172

AUTOMOTIVE DEALERS AND SERVICE STATIONS (motor cycles, recreation vehicles, etc.)

Motor vehicle dealers (used only)	5521
Auto and home supply stores	5531
Gasoline and service stations	5541

PERSONAL SERVICES (laundry, barber shops, shoe repair, etc.)

Power laundries, family and commercial	7211
Garment pressing, and agents for laundries and dry cleaners	7212
Linen supply	7213
Diaper service	7214
Coin-operated laundries and dry cleaning	7215
Dry cleaning plants, except rug cleaning	7216
Carpet and upholstery cleaning	7217
Laundry and garment services, nec	7219
Photographic studios, portrait	7221
Beauty shops	7231
Barber shops	7241
Shoe repair shops, shoe shine parlors, and hat cleaning shops	7251
Funeral service and crematories	7261
Miscellaneous personal services	7299

BUSINESS SERVICES (advertising, mailing, building maintenance, data processing, etc.)

Direct mail advertising services	7331
Blueprinting and photocopying services	7332

Appendix B. List of In-Scope Four-Digit SIC

Codes and Narrative Descriptions (Cont.)

Commercial photography, art, and graphics	7333
Stenographic services; and reproduction services, nec	7339
Window cleaning	7341
Disinfecting and exterminating services	7342
Cleaning and maintenance services to dwellings and other buildings, nec	7349
Research and development laboratories	7391
Photofinishing laboratories	7395
Commercial testing laboratories	7397
Business services, nec	7399
AUTO REPAIR, SERVICES AND GARAGES (auto rentals, general auto repair, etc.)	
Passenger car rental and leasing, without drivers	7512
Utility trailer and recreational vehicle renting	7519
Top and body repair shop	7531
Tire retreading and repair shops	7534
Paint shops	7535
General automotive repair shops	7538
Automotive repair shops, nec	7539
Car washes	7542
Automotive services, except repair and car washes	7549
OTHER REPAIR SERVICES (radio and TV repair, electric appliance repair, etc.)	
Radio and television repair shops	7622
Refrigeration and air conditioning service and repair shops	7623
Electrical and electronic repair shops, nec	7629
Watch, clock, and jewelry repair	7631
Reupholstery and furniture repair	7641
Welding repair	7692
Armature rewinding shops	7694
Repair shops and related services, nec	7699
HEALTH SERVICES (offices of doctors, dentists, hospitals, medical laboratories, etc.)	
General medical and surgical hospitals	8062
Medical laboratories	8071
Dental laboratories	8072
Health and allied services, nec	8091
MUSEUMS, BOTANICAL, ZOOLOGICAL GARDENS	
Museums and art galleries	8411
Arboreta, botanical, and zoological gardens	8421

APPENDIX C. INTENDED CONTROL CODES

CODE PERSONAL PROTECTIVE EQUIPMENT

- EP Ear (Hearing) Protection: Muffs, Plugs
- EF Eye and Face Protection: Face shields, Goggles, Safety glasses,
Welding helmets, Laser glasses and goggles
- FP Foot Protection: Safety shoes or boots, Foot guards
- HG Hand Protection: Protective gloves
BC Protective barrier creams
- HP Head Protection: Dielectric, Bump, Impact
- PS Protective Clothing: Full protective suit
PA Apron
PC Coat
PP Pants

RESPIRATORY PROTECTIVE DEVICES

- CF Chemical cartridge respirator with full facepiece
CH Chemical cartridge respirator with half facepiece
CQ Chemical cartridge respirator with quarter facepiece
FF Particulate filter respirator with full facepiece
FH Particulate filter respirator with half facepiece
FQ Particulate filter respirator with quarter facepiece
RF Combination particulate filter and chemical cartridge respirator with
full facepiece
RH Combination particulate filter and chemical cartridge respirator with
half facepiece
RQ Combination particulate filter and chemical cartridge respirator with
quarter facepiece
GR Gas mask (canister) respiratory devices
SR Supplied air respiratory devices
Self-contained respiratory apparatus
Air line respirator
Hose mask with and without blowers
Abrasive blasting helmets, hoods or masks
- OR Other respiratory devices

VENTILATION

- DV Dilution ventilation
LV Local exhaust ventilation
NV Natural ventilation
LG Local gravity ventilation

OTHER MEANS OF CONTROL

- IC Isolation, Enclosure, Shielding
AC Administrative Control (limiting the time of employee's exposure)
OC Other - Explain
NC No Control

APPENDIX D. PHYSICAL EXPOSURES

ELECTROMAGNETIC RADIATION

CODED AS:

Laser ----- LM
Maser ----- LM
Ionizing radiation ----- IO
X-ray radiation ----- XR
Infrared radiation ----- IR
Microwave radiation ----- MW
Long wave radio frequency ----- RF
Ultraviolet radiation ----- UV
Ultraviolet radiation - black light ----- BL
Ultraviolet radiation - germicidal lamp ----- GC

NOISE

Continuous noise ----- NC
Impact noise ----- NM
Ultrasonic ----- NY

VIBRATION

Segmental vibration ----- VS
Whole body vibration ----- VW

TEMPERATURE

Elevated temperature ----- ET
Depressed temperature ----- DT

PRESSURE

Decreased air pressure ----- DA
Increased air pressure ----- IA

APPENDIX E. NOES PRODUCT USE TERMS (PUTS)

Abrasive shot
Abrasive blasting
Abrasive grinding
Abrasive, NEC
Absorbent, gas
Absorbent, liquid
Absorbent, solid
Absorbent, ultraviolet
Accelerator
Accelerator, rubber
Acoustical plaster
Acoustical tile
Activator
Additive, chemical process
Additive, concrete
Additive, fuel
Additive, fuel oil
Additive, ink
Additive, NEC
Additive, paint
Adhesive, animal-glue
Adhesive, NEC
Adhesive, rubber-base
Adhesive, starch
Adhesive, synthetic-resin
Air freshener
Alcohol
Algicide
Alkyl naphthalene sulfonate
Alkylbenzene sulfonate
Alloy
Amino acid
Analgesic
Analytical reagent, NEC
Anesthetic
Animal repellent
Antacid
Anti-foaming agent
Anti-sieze compound
Antibacterial agent
Antibiotic
Anticaking agent
Anticoagulent
Antifoaming agent
Antifreeze, foodgrade
Antifreeze, gasoline
Antifreeze, NEC
Antifreeze, radiator
Antifreeze, windshield
Antihistamine
Antimildew solution
Antineoplastic agent
Antioffset and smooth lay compound
Antioxidant
Antiseptic
Antisplattering agent
Antistatic agent
Antisticking agent
Antisticking agent, food
Arterial fluid
Asphalt
Assay, metallurgical
Assay, NEC
Assay, pharmacological
Astringent
Barrier cream
Base
Belt dressing
Binder, abrasive-wheel
Binder, foundry
Binder, masonry
Binder, NEC
Binder, sizing
Biocide
Biological stain
Blanketwash
Bleaching agent
Bluing agent
Body powder
Boiler water treatment chemical
Brake drum
Brake fluid
Brake lining
Brake pad
Brakes, airplane
Brakes, automotive
Braze, BRD
Braze, BRF
Braze, BRI
Braze, BRR
Braze, BRT
Brick
Brightener
Bronchial dilator
Buffer
Buffing compound
Builder, detergent
Burnishing compound
Cable, wire
Calibrating solution
Carpet pad
Catalyst

Appendix E. NOES Product Use Terms (PUTs) (Cont.)

Caulking compound	Construction material, other products - NEC (use CMNEC)
Cement, alumina	Construction material, wood products - NEC (use CMWP)
Cement, masonry	Contact cement
Cement, NEC	Control reagent
Cement, portland	Coolant controller
Cement, pozzolan	Coolant, NEC
Ceramic, clay	Copy machine fluid
Ceramic, NEC	Correction fluid
Chalk	Corrosion inhibitor
Chemical, NEC	Cosmetic
Clay	Cosmetic, NEC
Clay, alumina	Cream relaxer, hair
Clay, colloidal	Cream rinse, hair
Cleaner, acidic	Curing agent
Cleaner, automotive	Dairy product (specify - i.e., cream, milk)
Cleaner, basic	Deactivator, photographic
Cleaner, bowl	Deburring powder
Cleaner, carburetor	Dechlorinating agent
Cleaner, carpet	Decongestant
Cleaner, caustic	Deemulsifier
Cleaner, electrical contact	Defoamer agent
Cleaner, fabric	Defoliant
Cleaner, floor	Deglasing solution
Cleaner, food	Degreaser
Cleaner, fuel	Dehairing agent
Cleaner, general	Dehydrating agent
Cleaner, glass	Deicer, sidewalk
Cleaner, hand	Delimiting agent
Cleaner, masonry	Denaturant
Cleaner, metal	Deodorant
Cleaner, NEC	Deoxidizer
Cleaner, plastic	Depressant
Cleaner, tire	Descumming agent
Cleaner, type	Desensitizing agent
Cleaner, waterless hand	Desiccant
Clutch pad, automotive	Detergent
Coagulant	Developer replenisher
Coal tar	Developer starter
Coating, NEC	Developer, NEC
Coating, roof	Diagnostic reagent
Coke	Diagnostic reagent, pharmaceutical
Color equalizer	Dietary supplement
Coloring agent	Disinfectant
Compound, joint	Dispersant
Concrete	Dope
Conditioner, ink	Dough conditioner
Conditioner, NEC	Drain opener
Conditioner, paint	Drawing compound
Conductive powder	
Construction material, metal products - NEC (use CMMP)	

Appendix E. NOES Product Use Terms (PUTs) (Cont.)

Drier	Fire extinguisher
Drilling fluid	Fire retardant
Dry cleaning agent	Fixative, biological
Dry milk	Fixative, photographic
Drywall	Fixing agent, chemical
Duplicator fluid	Fixing agent, mechanical
Dust control compound	Fixing agent, NEC
Dust mop treatment	Fixing agent, perfume
Dye solvent	Flattening agent
Dye, acid	Flavor enhancer
Dye, azoic	Flavoring agent
Dye, basic	Flocculant, anionic
Dye, direct	Flocculant, cationic
Dye, disperse	Flocculant, NEC
Dye, mordant	Floor wax
Dye, NEC	Flour
Dye, reactive	Fluid, cutting
Dye, solvent	Flux, brazing
Dye, sulfur	Flux, brazing BRD
Dye, vat	Flux, brazing BRF
Electrode cream	Flux, brazing BRI
Electrode, arc	Flux, brazing BRR
Electrode, NEC	Flux, brazing BRT
Electrolyte	Flux, galvanizing
Embalming fluid	Flux, NEC
Emulsifier	Flux, soldering SOE
Enamel	Flux, soldering SOT
Epoxide	Flux, soldering SOD
Equalizer, NEC	Flux, soldering SOI
Etching compound	Flux, soldering
Expectorant	Flux, tinning
Explosive	Flux, welding AHW
Extender, food	Flux, welding ARW
Extender, pigment	Flux, welding ESW
Eye drops	Flux, welding FCA
Eyewash	Flux, welding MIG
Fabric coating compound	Flux, welding OFW
Fabric finisher	Flux, welding OWP
Fabric softener	Flux, welding PAW
Fabric, NEC	Flux, welding REW
Fabric, synthetic	Flux, welding SAW
Fiberboard	Flux, welding STW
Fiberglass	Flux, welding TIG
Fiberglass fabric	Foaming agent
Fiberglass insulation	Food additive
Filler, dental	Food preservative
Filler, NEC	Fountain solution
Film hardener	Freon
Film, NEC	Fuel
Filter media	Fumigant
Finishing compound	Fungicide

Appendix E. NOES Product Use Terms (PUTs) (Cont.)

Furniture polish	Ink, printing
Galvanizing compound	Ink, screen process
Gasoline, leaded	Ink, stamping
Gasoline, unleaded	Ink, stencil
Gel, NEC	Ink, writing
Gelatin	Insecticide
Germicide	Insulation
Glass, alkali	Insulation, electrical
Glass, alumina-silica	Intensifier
Glass, borosilicate	Jet fuel, kerosine-type
Glass, ceramic	Jet fuel, naphtha-type
Glass, fiber	Kerosine
Glass, lead	Lacquer
Glass, NEC	Lacquer thinner
Glass, silica	Lapping compound
Glass, soda-lime	Latex
Glazing compound	Latex, acrylic
Grains (specify-i.e., oats, corn)	Laundry additive
Gravel	Laxative
Grease	Layout fluid
Grease cutter	Leak detector
Grinding compound	Leather
Grinding fluid	Leather conditioner
Grinding wheel	Leavening agent
Grout	Lecithin
Gum	Lignosulfonate
Hair conditioner	Limestone
Hair dye	Linament
Hair rinse	Lining compound
Hair set	Lotion, NEC
Hair spray	Lubricant
Hair straightener	Machine coolant
Hair tonic	Mastic
Hardener	Meat tenderizer
Heat styling lotion, hair	Media
Heat transfer compound	Medical test reagent, NEC
Heat treating chemical	Medicine, NEC
Herbicide	Metal (specify or use alloy-i.e., steel, copper, lead or alloy)
Hops	Metal defect detector
Impregnated paper, printing	Metal surface treatment
Indicator	Mineral spirits
Inhalant, bronchial	Moisturizer
Inhibitor	Mold release
Inhibitor, scale	Molding compound
Ink drier	Mortar
Ink remover	Mouthwash
Ink, copying	Nail polish
Ink, drawing	Neutralizing agent
Ink, lithographic	Nutrient media
Ink, marking	Nylon
Ink, metal marking	

Appendix E. NOES Product Use Terms (PUTs) (Cont.)

Offset printing compound
Oil, animal
Oil, cutting
Oil, fuel (general)
Oil, fuel no. 1
Oil, fuel no. 2
Oil, gear
Oil, honing
Oil, hydraulic
Oil, linseed
Oil, lube
Oil, machine
Oil, mineral
Oil, motor
Oil, NEC
Oil, penetrating
Oil, pine
Oil, quenching
Oil, tapping
Oil, vegetable
Ointment
Oxidizing agent
Packing compound
Padding compound
Paint drier
Paint remover
Paint thinner
Paint, acrylic
Paint, alkyd
Paint, epoxy
Paint, latex
Paint, marine
Paint, NEC
Paint, oil base
Paint, phenolic
Paint, silicone
Paint, vinyl
Paper, NEC
Paper, photographic
Paper, reflective
Paraffin
Penetrant
Peptone
Perfume
Permanent solution, hair
Pesticide, avicide
Pesticide, larvicide
Pesticide, miticide
Pesticide, molluscicide
Pesticide, NEC
Pesticide, pediculicide
Pesticide, rodenticide
Petroleum dressing
Petroleum ether
Petroleum jelly
Petroleum naphtha
Petroleum spirit
Pharmaceutical compound, NEC
Photo resist
Photographic chemical, NEC
Photographic conditioner
Photographic developer
Photographic emulsion
Photographic film
Photographic film, x-ray
Photographic fixer
Photographic plate cleaner
Photographic plate developer
Pigment
Pine tar
Pip
Pipe joint sealer
Plasma
Plaster
Plaster board
Plastic
Plastic body filler
Plasticizer
Plating compound, chrome
Plating compound, tin
Plating compound, NEC
Plating resist
Plating solution
Polish
Polymer, inorganic
Polymer, organic
Porcelain
Potting compound
Power steering fluid, automotive
Precipitant
Preservative
Primer
Printing chemical
Propellant-aerosol
Protein
Pumice
Putty
Quenchant, synthetic
Radioactive isotope
Reagent, biological
Reagent, NEC
Reducing agent

Appendix E. NOES Product Use Terms (PUTs) (Cont.)

Refractory compound	Rust inhibitor
Refrigerant	Rust preventative
Releasing agent	Rust remover
Remover, film	Sand
Remover, flux	Sand paper
Remover, glaze	Sand, silica-free
Remover, rosin	Sanding belt
Replenisher, NEC	Sanding disk
Resin, acrylic	Sanitizer
Resin, alkyd	Sanitizer, NEC
Resin, amino	Saver, blanket
Resin, epoxy	Scratch remover
Resin, formaldehyde	Sealant
Resin, melamine-urea	Seasoning, food
Resin, melamine	Sedative
Resin, natural	Shake, roofing
Resin, NEC	Shampoo
Resin, phenolic	Shaving cream
Resin, polyamide	Shellac
Resin, polyester	Shingle, asphalt
Resin, polyether	Shortening
Resin, polypropylene	Silica gel
Resin, polyurethane	Sizing compound
Resin, polyvinyl	Soap, liquid
Resin, silicone	Soap, NEC
Resin, styrene	Soap, solid
Resin, melamine-urea	Soapstone
Retaining compound (for mechanical fasteners)	Softener
Retarder	Soil additive
Reversal bath	Solder reflow agent
Roller cleaner, printing	Solder, NEC
Roofing cement	Solder, SOD
Roofing felt	Solder, SOE
Roofing paper	Solder, SOI
Roofing tile	Solder, SOT
Rosin	Solvent, acid
Rubber, acrylic-butadiene	Solvent, alcohol
Rubber, acrylonitrile	Solvent, aldehyde
Rubber, butadiene-styrene	Solvent, amine
Rubber, butyl	Solvent, brominated
Rubber, chloroprene	Solvent, chlorinated
Rubber, foam	Solvent, ether
Rubber, isobutylene-isoprene	Solvent, fluorinated
Rubber, isoprene	Solvent, glycol
Rubber, NEC	Solvent, ketone
Rubber, neoprene	Solvent, NEC
Rubber, polybutadiene	Spackle
Rubber, silicone	Specific chemical compound (specify-i.e., xylene)
Rubber, thiokol	Specific dairy product (specify-i.e., light cream)
Rubber, urethane	
Rubbing compound	

Appendix E. NOES Product Use Terms (PUTs) (Cont.)

Specific food grain (specify- i.e., oats)	Thinner
Specific metal/alloy (specify- i.e., copper)	Thinner, flux
Specific mineral (specify- i.e.; flint)	Thiuram
Spot indicator	Tile, ceramic
Stabilizer, emulsion	Tile, floor
Stabilizer, foam	Tint
Stabilizer, heat	Tinting agent
Stabilizer, NEC	Toner, hair
Stabilizer, photographic	Toner, NEC
Stain remover	Toothpaste
Staining agent	Tracer, radioactive
Starch, amylose	Tracing cloth powder
Starch, cassava	Tranquilizer
Starch, corn	Transmission fluid
Starch, NEC	Tung oil
Starch, potato	Turpentine
Starch, rice	Undercoating
Starch, saga	Varnish
Starch, wheat	Varnish, binding
Starting fluid, automotive	Vegetable product
Steam cleaning compound	Vehicle, paint
Sterilizing agent	Vehicle, pigment
Steroid, anabolic androgen	Vitamin
Steroid, corticoid	Vulcanizing agent
Steroid, progestational	Water softener
Stimulant	Water treatment compound
Stripping compound	Waterproofing agent
Stripping solution	Wax
Sulfenamide	Wax, paraffin
Surfactant, anionic	Welding rod, AHW
Surfactant, cationic	Welding rod, ARW
Surfactant, NEC	Welding rod, ESW
Surfactant, nonionic	Welding rod, FCA
Surfactant, semipolar	Welding rod, MIG
Surfactant, zwitterionic	Welding rod, NEC
Sweeping compound	Welding rod, OFW
Sweetener	Welding rod, OWP
Syrup, cough	Welding rod, PAW
Talcum powder	Welding rod, REW
Tall oil	Welding rod, SAW
Tallow	Welding rod, STW
Tannin	Welding rod, TIG
Tanning agent	Wetting agent
Tape, adhesive	Whitening agent
Tape, graphite-based	Wire, NEC
Tape, NEC	Wire, welding
Thickener (not food item)	Wood filler, NEC
Thickener, food	Wood filler, plastic
	Wood preservative
	Wood sealer
	Wood stain
	Wood surface treatment

APPENDIX F. OPERATIONAL DEFINITIONS OF ELEVEN

CRITICAL CHRONIC TRAUMA HAZARDS

Within the scope of these operational definitions, encoding of chronic trauma exposure is, of necessity, based on observations of the worksite made at the time of the survey. The key is that the motion or lack of motion fitting each operational definition must be relatively continuous and/or repetitive throughout the work day.

1. PP - Passive-Postures - refers to long term, stationary standing where the legs and feet would tire - e.g., standing passively for hours in front of a machine. Example occupations include cash register operator, machine tenders, and tire builders. Other passive postures to be identified would include those that involve the application of continuous pressure to body parts, e.g., glass blowers resting their elbows on benches, and/or leaning up against equipment, a wall, a ladder, or on benches.
2. AP - Awkward-Postures - refers to any body position that an individual must assume for prolonged periods involving extreme torso bending, tilted neck positions, semiprone positions, kneeling positions, and extreme deviation of hips from shoulder. Examples occur in service work - such as auto maintenance, electrical, ventilation and plumbing work. Additional examples of awkward postures include those tasks which require prolonged pushing with legs, climbing, crawling, or stooping.
3. LP - Lifting-Postures - refers to frequent bending and/or lifting-unaided, involving the waist, lower back and knees. The unaided carrying of materials typically observed at construction sites would also fit this classification.
4. AT - Arm-Transport Movements - refers to moving small or light objects with the arms from one position to another. Specifically this involves only movements of the upper torso, such as light duty pushing-pulling with files, sandpaper, or trowels. Folding and pressing of fabrics are other tasks which apply in this classification.
5. ST - Shoulder-Transport - refers to movements which are similar to arm-transport except that they involve larger, more forceful movements where the upper torso is repeatedly shifting; e.g., turning large wheels or wrenches, moving large work pieces short distances, and reaching up and over the head. Additionally, pushing and pulling operations involving brooms, rakes, mops and certain types of shoveling may also require upper torso movements.
6. HM - Hand/Wrist Manipulations - refers to movements which involve turning heavy objects, assembling and handling middle size objects (5-15 pound range), and the use of lightweight power and/or hand tools, such as screw drivers, tongs, scissors, tin snips, and hand staplers. Painting, rubbing or polishing small objects also fit in this category.

Appendix F. Operational Definitions of Eleven

Critical Chronic Trauma Hazards (Cont.)

7. **FM** - Finger-Manipulations - refers to fine precision type work, involving such actions as pinching, use of tweezers, electronic assembly-board component insertion and micro soldering. Twisting small screws, writing, typing, pushing keys, operating cash registers, entering data, using needles, pins, and picking up small objects are additional operations associated with this classification.
8. **MP** - Machine Paced Work - refers to workers interspersed with machines in a continuous work process in which they must perform repetitive tasks at set times and intervals dictated by the machine components in the process. Conveyor-line operations may involve such tasks as assembling, packaging, sorting, folding.
9. **EM** - Equipment Monitoring - refers to those processes closely allied with inspection tasks. Certain work operations require the presence of workers whose main function is to remain alert to any malfunctions or emergencies and to take corrective action when such events occur. In such cases, the lack of activity and the repetition of simple functions lead to boredom and excessive fatigue characteristic of mental chronic trauma. Workers in power plants and automated chemical manufacturing exemplify this type of job. Similar jobs that also involve monitoring and checking are quality control and product inspection tasks where a worker checks output product against specifications, e.g., sorting out defective items for correction or disposal.
10. **LL** - Light/Glare Level - refers to some of the following questions: Are there unusual lighting conditions with or without shades or shields present in the work place? Are there unusual reflective or bright surfaces or materials present? Does the worker use an automated display of any type, such as CRT, VDT, or a simple TV monitor? Is there a great amount of contrast present, i.e., areas that are bright, next to work areas that are dark? Does the individual move from areas of brightness to darkness or vice versa, frequently? What about the color of the lights? Are there any unusual hues from the illumination, such as blues, or reds? (Record the presence of any of the above conditions by coding LL.)
11. **DL** - Diminished Light - refers to the absence of natural or artificial light in the general working area, except for lighting devices carried by individual workers. An example would be the helmet used by miners.

APPENDIX 6. JOBS AND CHRONIC EFFECTS OF TRAUMA

JOB	DISEASE CONDITION
Building and civil engineering workers	Kienbock's disease
Glass cutters (nerve impairment)	Carpal tunnel syndrome
Cobblers	Funnel chest
Female carders	Varicose veins
Female fibre drawers	Varicose veins
Female fibre roving machine operators	Varicose veins
Female postal workers	Varicose veins
Manual workers	Kienbock's disease
Layers of glued floor coverings	Hygroma of knee
Typists	Beat conditions
Mechanical draftsmen	Beat conditions
Mushroom growers	Onychopathy
Miners	Beat hand*
Joiners	Beat hand
Construction workers	Beat hand
Caulkers	Beat hand
Carpet layers	Beat knee**
Miners	Beat knee
Asphalt layers	Beat knee
Joiners	Beat knee
Pottery makers	Tenosynovitis
Glaze dipping	Tenosynovitis
Brick making	Tenosynovitis
Assembly line workers	Tenosynovitis
Belt conveyor sorting for food canning	Tenosynovitis
Press operators	Tenosynovitis
Evisceration and trussing chickens	Tenosynovitis
Cash register operators	Cervicobrachial disorders
Telephone operators	Chronic laryngitis
Fire fighters	Ischaemic heart disease
Cash register operators	Fatigue and muscle weakness
Teleprinter operators	Cramp and myalgia
Artificial inseminator (cattle)	Digital ischaemia
Type solderers	Finger tip problems
Immobile standing jobs	Varicose veins
Bus drivers	Cervical and lumbar spondylarthritis
Bus drivers	Disorders of digestive system
Bus drivers	Psychoneuroses
Glass blowers	Atrophy of the hands
Computer keyboard operators	Slowed palmer & knee reflexes
Cash register operators	Chronic irreversible fatigue
Glass cutting and engraving	Compression of peripheral nerves

Appendix G. Jobs and Chronic Effects of Trauma (Cont.)

JOB	DISEASE CONDITION
Ironing	Compression of peripheral nerves
Rolling-mill workers	Osteoarthritis of elbow
Traffic controllers	Hypertension, peptic ulcer
Glass cutters	Carpel tunnel
Strawberry pickers	Foot drop: lateral popliteal nerve palsy
Farm workers	Manure shovelers' hip

* Subcutaneous cellulitis of the hand

** Bursitis or subcutaneous cellulitis of the knee

APPENDIX H. CODING CONVENTIONS FOR WELDING, BRAZING,
SOLDERING, AND THERMAL CUTTING PROCESSES

Welding

Oxyfuel Gas Welding	OFW
oxyacetylene welding	
pressure gas welding	
Resistance Welding	REW
resistance spot welding	
resistance seam welding	
production welding	
electromagnetic solid-state welding	
Arc Welding	ARW
shield metal arc welding	
metal arc welding	
carbon arc welding	
Gas Metal Arc Welding - (MIG Welding)	MIG
pulsed arc welding	
short circuit arc welding	
electrode gas welding	
spray transfer welding	
buried arc welding	
Gas Tungsten Arc Welding (TIG Welding)	TIG
gas tungsten arc spot welding	
Flux Cored Arc Welding	FCA
Submerged Arc Welding	SAW
Plasma Arc Welding	PAW
Stud Welding	STW
Atomic Hydrogen Welding	AHW
Electro-slag Welding	ESW
Other Welding Process	OWP

**Appendix H. Coding Conventions for Welding, Brazing,
Soldering, and Thermal Cutting Processes (Cont.)**

Brazing

Record one of the following brazing processes.

Torch	BRT
Furnace	BRF
Dip	BRD
Induction	BRI
Resistance	BRR

Record the braze metal but not the base metal.

Soldering

Record one of the following soldering processes.

Electric Irons	SOE
Torch	SOT
Dip	SOD
Induction	SOI

Record the solder but not the base metal.

Cutting

Record one of the following cutting processes.

Oxyfuel Gas Cutting	OFC
Arc Cutting	ARC
Plasma Arc Cutting	PAC

**Appendix H. Coding Conventions for Welding, Brazing,
Soldering, and Thermal Cutting Processes (Cont.)**

Example No. 2

A welder is connecting a steel part to a galvanized steel frame by flux cored arc welding. The flux containing consumable electrode is called EZ-14B3 Mild Steel Electrode E70T-1; mfg. EZ Welding Co., Troy, Ohio 45373. The shielding gas is CO₂.

Code as follows:

Computer Processing		Conditions				Employee Group Title										Number of Employees			
Line #	Special Instruction	1	2	3	4	Responsible Exposure										Total	Number of Females		
01-99	00-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99	01-99		
015																		1	
110					F													1	
115					F													1	
210	Y.F.G.																		
215	TRN. 001																		
310	C.																		
315	PHIT				F													1	
410					F													1	
415																			
510																			

The outputs not to be recorded are:

- | | |
|-----------------|--------------------------------|
| UV-light | products contained in the flux |
| iron oxides | asbestos |
| zinc oxides | feldspar |
| nitrogen oxides | mica |
| sulfur dioxide | steatite |
| silicon oxide | titanium dioxide |
| manganese oxide | calcium carbonate |
| carbon dioxide | aluminum oxide |
| carbon monoxide | cadmium |
| ozone | fluorine compounds |
| zinc oxide | |

**Appendix H. Coding Conventions for Welding, Brazing,
Soldering, and Thermal Cutting Processes (Cont.)**

Example No. 3

Thick stainless steel plates are being joined by plasma arc welding. A mixture of 60% argon and 40% hydrogen gas is used as a fuel and a shield.

Code as follows:

Computer Processing		Conditions				Employee Group Title													Number of Employees	
Line #	Special Instruction	A	B	Cut	E	Recordable Exposure													Total	Number of Postals
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
015						WELDERS													1	
110		F				PAW STAINLESS STEEL													1	
115		F				PAW ARGON/HYDROGEN													1	
210																				
215																				
310																				

The outputs are:

- | | |
|-----------------|-------------------|
| x-rays | UV-light |
| infrared | noise |
| ozone | iron oxides |
| chromium oxides | nitrogen oxides |
| silicon oxides | molybdenum oxides |
| nickel oxides | |

NOTE: If welding or cutting is being done on any metal which contains a lead base paint, be sure to code for lead.

If the metal is treated with a phosphate rust proofing -- record phosphine.

If a chlorinated hydrocarbon is being decomposed -- record phosgene, hydrogen chloride, chlorine.

**Appendix H. Coding Conventions for Welding, Brazing,
Soldering, and Thermal Cutting Processes (Cont.)**

Example No. 4

When coding for brazing or soldering where the only input is a trade name, first code for the process then on the following lines code for the manufacturer and the trade name. The mnemonic will come after the PUT term.

Three employees are soldering electronic circuit boards with heating irons and using speed solder by Heavenly Mt. Manufacturing Co. Lake Tahoe, Nevada.

Computer Processing		Conditions				Employee Group Title																Number of Employees																																																							
Line #	Signal Instruction	SP	MA	CA	RE	Recordable Exposure																Total	Number of Process																																																						
01	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
015						SOLDERERS																3																																																							
110		E				SOE																3																																																							
115	MFG					HEAVENLY MT. MANUFACTURING CO.																																																																							
210	L					LAKE TAHOE, NEVADA																																																																							
215	TRN	E				SPEED SOLDER																3																																																							
310	PUT	E				SOLDER, SOE																3																																																							
315																																																																													
410																																																																													
415																																																																													