

grant of authority in this proceeding is phrased in accordance with the policy statement entitled Notice to Interested Parties of New Requirements Concerning Applications for Operating Authority to Handle Traffic to and from points in Canada published in the FEDERAL REGISTER on December 5, 1974, and supplemented on November 18, 1975. The Commission is presently considering whether the policy statement should be modified, and is in communication with appropriate officials of the Provinces of AB, SK, and MB regarding this issue. If the policy statement is changed, appropriate notice will appear in the FEDERAL REGISTER and the Commission will consider all restrictions or conditions which were imposed pursuant to the prior policy statement, regardless of when the condition or restriction was imposed, as being null and void and having no force or effect.

WATER CARRIER AUTHORITY

W 1320 (Sub-1F), filed May 17, 1978.
Applicant: EDWARD H. BARNABY and RICHARD W. CASEY, a partnership, d.b.a. CMT TRANSPORTATION CO., P.O. Box 216, Chicago, IL 60617.
Representative: Carl L. Steiner, 39 South La Salle Street, Chicago, IL, 60603. Authority granted to operate as a *common carrier*, by motor vehicle, over irregular routes, transporting: *Commodities generally*, by non-self propelled vessels with the use of separate towing vessels, between ports and points along Lake Michigan, Lake Superior, Lake Huron, Lake Erie, and Lake Ontario, and interconnecting waterways. (Hearing site: Chicago, IL.)

[FR Doc. 78-20472 Filed 7-24-78; 8:45 am]

sunshine act meetings

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409), 5 U.S.C. 552b(e)(3).

CONTENTS

Items

Federal Energy Regulatory
Commission
International Trade
Commission
Interstate Commerce
Commission

1
2
3

[6740-02]

1

FEDERAL ENERGY REGULATORY COMMISSION.

"FEDERAL REGISTER" CITATION OF PREVIOUS ANNOUNCEMENT: 43 FR 30644, published July 17, 1978.

PREVIOUSLY ANNOUNCED TIME AND DATE OF MEETING: 10 a.m., July 19, 1978.

CHANGE IN THE MEETING: The following item has been added:

Item No., Docket No., and Company

CP-7. CP78-351, Transcontinental Gas Pipe Line Corp.

KENNETH F. PLUMB,
Secretary.

[S-1509-78 Filed 7-21-78; 11:05 am]

[7020-02]

2

[USITC SE-78-36]

INTERNATIONAL TRADE COMMISSION.

TIME AND DATE: 11 a.m., Thursday, August 3, 1978.

PLACE: Room 117, 701 E Street NW., Washington, D.C. 20436.

STATUS: Open to the public.

MATTERS TO BE CONSIDERED:

1. Agenda.
2. Minutes.
3. Ratifications.
4. Petitions and complaints (if necessary): (a) Whips (docket No. 524); (b) Nylon from France (Docket No. 525); (c) Perchloroethylene from Belgium, France, and Italy (Docket No., 526).
5. Copper (Inv. TA-201-32)—Vote on injury (at 2 p.m.).
6. Bolts, nuts, and screws—Vote on the question of "good cause."
7. Bicycle tires and tubes (Inv. TA-201-33)—Briefing.
8. Any items left over from previous agenda.

CONTACT PERSON FOR MORE INFORMATION:

Kenneth R. Mason, Secretary, 202-523-0161.

[S-1510-78 Filed 7-21-78; 11:05 am]

[7035-01]

3

INTERSTATE COMMERCE COMMISSION.

TIME AND DATE: 9 a.m., Monday, July 31, 1978.

PLACE: Hearing Room "B", Interstate Commerce Commission Building, 12th Street and Constitution Avenue NW., Washington, D.C.

STATUS: Oral argument.

MATTER TO BE CONSIDERED: Corrected Second Revised Service Order No. 1309—Railroad operating regulations for freight car movement.

CONTACT PERSON FOR MORE INFORMATION:

Douglas Baldwin, Director, Office of Communications, Telephone 202-275-7252.

The Commission's professional staff will be available to brief news media representatives on conference issues at the conclusion of the meeting.

[S-1511-78 Filed 7-21-78; 3:54 pm]

Registered
Proprietary

TUESDAY, JULY 25, 1978
PART II



**ENVIRONMENTAL
PROTECTION
AGENCY**

■

CHEMICAL USE LIST
Request for Public Comment

[6560-01]

ENVIRONMENTAL PROTECTION AGENCY

Office of Toxic Substances

[FRL 930-7; OTS-010001]

CHEMICAL USE LIST

Request for Public Comment

AGENCY: Environmental Protection Agency, Office of Toxic Substances.

ACTION: Request for public comment.

SUMMARY: Under the authority of the Toxic Substances Control Act (TSCA), Pub. L. number 94-469, 15 U.S.C. 2601 et seq. (1976), the Administrator of the Environmental Protection Agency (EPA) may require manufacturers, importers, and processors of chemical substances for commercial purposes to report to the Agency information concerning the use of chemical substances. EPA is developing a system to classify use information, called the Chemical Use List, for purposes of industry reporting and EPA decisionmaking.

This notice describes the Chemical Use List at its present state of development and identifies certain key issues regarding its implementation. Public comment is solicited on these, or any other issues related to the list, including alternative approaches to chemical use classification. Comments received will be considered carefully in the Agency's evaluation of the applicability, utility, and technical merit of the Chemical Use List, and in possible future modifications. This notice itself does not require reporting of any information to EPA.

ADDRESSES: Persons who wish to submit written comments on the Chemical Use List and the issues discussed in this notice are requested to submit them by September 22, 1978 to: Joyce Barbour, Environmental Protection Agency, Office of Toxic Substances (TS-793), 401 M Street SW., Washington, D.C. 20460. Comments should be filed in triplicate and should bear the identifying notation OTS-010001. All written comments filed pursuant to this notice will be available for public inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding holidays, in room 711A, WSME, EPA Headquarters, 401 M Street SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Director, Industry Assistance Office, Office of Toxic Substances (TS-793), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460. The toll-free telephone number is 800-424-9065. In Washington, D.C., please call 554-1404. Per-

sons who desire informal meetings with EPA representatives should contact the industry assistance office as directed. All such meetings must take place before September 22.

BACKGROUND

Under the Toxic Substances Control Act, the Environmental Protection Agency is responsible for identifying and regulating commercial chemical substances which may pose an unreasonable risk to human health or the environment. In order to discharge this responsibility, the Agency will require many different kinds of information on chemical substances. For example, to perform a risk assessment on a chemical substance, the Agency must consider what the substance is used for, its known or potential toxic effects, production levels, persistence in the environment, transport, environmental fate, physical/chemical properties, and other related data.

The Agency is assessing the merits of utilizing a use classification system, such as the Chemical Use List, for the purpose of assisting industry in clearly and uniformly reporting use information under sections 5 and 8. Although the Agency does not intend to require reporting of use information on all chemical substances included in the section 8(b) inventory, EPA will require reporting of use information on selected chemicals or certain categories of chemicals in order to carry out TSCA. For instance, under section 5, persons who intend to manufacture a chemical substance that is not on the section 8(b) inventory of chemical substances, or who intend to manufacture or process a chemical substance for a significant new use, are required to submit a notice to the Agency providing, among other information, the proposed categories of use for the chemical substance. Under section 8, the Agency intends to promulgate rules which will require the reporting of use information on selected chemicals or certain categories of chemicals, when such information is needed for purposes of supporting the findings for a testing requirement under section 4, or for assessing unreasonable risk and determining the availability of substitute chemicals under section 6.

REQUIREMENTS FOR A USE CLASSIFICATION SYSTEM

EPA's use classification system should be sufficiently comprehensive to encompass all categories of usage that fall within the jurisdiction of TSCA. The classification system, however, should not include superfluous categories. Because new uses for chemical substances are constantly being discovered, it is essential that the system be expandable to include new uses as they arise. Furthermore,

the system should allow a person with only a moderate technical background to easily and accurately determine how to classify a chemical use.

DEVELOPMENT OF CHEMICAL USE LIST

In developing the Chemical Use List, EPA evaluated a number of existing classification systems, including the following:

- Standard Industrial Classification Manual*, Office of Management and Budget, 1972.
- Numerical List of Manufactured Products*, Bureau of the Census, 1973.
- Tariff Schedules of the U.S.*, Annotated, U.S. International Trade Commission, 1975.
- Schedule A—Commodities Imported into the U.S.*, Bureau of the Census, 1960.
- Schedule B—Commodities Exported from the U.S.*, Bureau of the Census, 1971 (with revisions through 1975).
- Classified Index of Industries and Occupations*, Bureau of the Census, 1971.
- U.S. Foreign Grade Statistics: Classifications and Cross-Classifications*, 1974, Bureau of the Census, 1975.
- Standard International Trade Classification, Revised*, United Nations, 1961.
- Nomenclature for the Classification of Goods in Customs Tariffs* (Brussels Tariff Nomenclature), Customs Co-operation Council (Brussels), 1955.
- International Standard Industrial Classification of all Economic Activities*, United Nations, 1968.
- Commodity Classification for Transportation Statistics*, Office of Management and Budget, 1972.
- List of Materials Consumption Items*, Bureau of the Census, 1972.
- Federal Supply Classification*, Defense Supply Agency, 1975.

While some of these systems were superior to others, no system satisfied all of the requirements previously stated.

EPA has conducted a pilot test in which seven chemical companies tested whether they could use a progenitor to the Chemical Use List containing some 200,000 function/application terms to classify uses of some of the chemical substances they manufactured, processed, or imported. After analyzing the results and comments received, EPA developed the simplified list of some 800 terms and is now submitting it for wider review.

EPA recognizes that neither the list of function terms nor the corresponding list of application terms may be complete and that a list identifying all significant uses may never be feasible. EPA encourages respondents to this notice to suggest new function or application terms that are necessary to describe accurately the uses of their chemical substances.

CHEMICAL USE LIST

The Chemical Use List is a list of some 800 numerically coded uses, each defined by a combination of a "function" and an "application". A function is an action which a chemical substance performs, while an application is the manufacturing, service, or con-

sumer activity in which the chemical function is utilized. By assigning a numerical code to each function and to each application, the use of a chemical substance can be represented by a combination of a function and an application in a convenient notation for reporting. For example, if a chemical substance functions as an abrasive grinding compound which has an application in carpentry, the numerical code for this specific use will be 0021-03200, as indicated in appendix I. Instructions for using the Chemical Use List can be found in the section entitled "Preface to the Appendices".

ISSUES

The Agency is interested in obtaining comments on the issues and problems identified below and any related issues. EPA is not soliciting comments at this time on how the Chemical Use List would be utilized under section 5 and 8, but rather on whether the list satisfies the objectives outlined above (or otherwise identified by a commenter).

(1) Are there uses of chemicals not covered in appendix I? If so, what are these uses? Please describe them, if possible, in terms of a "function" and an "application", and provide a suitable brief statement describing each such use.

(2) Are the uses in appendix I clearly understandable? How can the definitions of the function terms be improved?

(3) Are any uses cited in appendix I so ambiguous that a given use might fall into more than one function/application combination? How can any such ambiguity be resolved?

(4) To what extent, if any, should the Chemical Use List be changed by modifying, aggregating, or expanding the existing uses?

(5) Can this list be used by persons with only a moderate technical background to easily and accurately determine how to classify a chemical use?

PREFACE TO THE APPENDICES

Three appendices are attached. Appendix I is the Chemical Use List. Each use on the list is a combination of a function and an application component as described in the text. The list is organized on the basis of a lexical

ordering of the numerical function codes. The number of digits in the code for a function is related to the degree of specificity of the function within a general category, three-digit codes represent the most general function categories and four digits the most specific. For example, the function "ultraviolet absorbers" whose code is 0032 is in the more general category of "absorbers" 003.

For each function component the associated application components are also lexically ordered by increasing numerical value of their numerical codes. In some instances, the roman numeral I is used in the "application component" column of appendix I to represent a function that is utilized as an application component. Similar to the function component codes, application component codes also represent the degree of specificity of the application within a general category. Two digits in the application code represents the most general categorization and five digits the most specific. For example, associated with the function 0032 "ultraviolet absorbers" are two applications, "plastic forming compounds" I304 and "miscellaneous fabricated plastic products" 070. The code I304 represents a function that in this instance is also an application, 304 is the function component code for "plastic forming compounds". By convention, all "I" codes will be listed first.

Appendix II is an alphabetical listing of all the function components of the chemical substance uses that are contained in appendix I. Appendix II also contains illustrative definitions for the listed functions and their associated codes. The application components of the uses of substances listed in appendix I were selected from the very much more detailed classificatory array of application terms given in appendix III. These applications are also listed by a lexical ordering of the numerical codes.

To utilize the appendices for classifying chemical substances, it may be helpful to use appendix II initially to find an appropriate function for the chemical substance to be classified. Appendix II also has the numerical function code listed with each function. This code can easily be found in the lexical ordering of the function

component codes in appendix I. The appropriate application component code if listed, in combination with the function component code will determine the use code for the chemical substance. For example, if the chemical substance N,N-Diphenylethylenediamine, which is used in the rubber industry as an oxygen inhibitor, were to be classified, the alphabetical listing in appendix II lists the function "oxygen inhibitors" with a numerical code of 293. Function 293 has associated with it in appendix I three applications, one of which is "plastic and rubber materials and synthetics" which has a numerical code of 21. Therefore, this chemical substance has its use coded 293-21.

In some cases, the application components listed with a function may not include the specific application for a particular chemical substance or the application may not be understood just from its listing in appendix I. Appendix III has been included in this notice so that the meaning of an application term in the Chemical Use List will be understandable from a consideration of its position in the hierarchy. Those who study and respond to this notice will also find appendix III useful in selecting appropriate application terms that must be associated with a function term but has not been included in the Chemical Use List. Some of the applications in appendix II are marked with asterisks (*); those that are marked represent applications which are listed at least once in appendix I. This will aid in determining the appropriate degree of specificity for an application term that does not appear in the list of applications for a function and, therefore, would need to be added. The hierarchy of appendix III may help respondents discover cases where it would appear that two or more terms could be combined into an inclusive term or a greater degree of specificity for certain terms is needed. Persons responding should bring these to the attention of EPA with a statement that supports each suggestion.

Dated: July 17, 1978.

STEVEN D. JELLINEK,
Assistant Administrator
for Toxic Substances.

APPENDIX I.—Chemical use list, function/application use term combinations
(In increasing lexical order of function and application numbers)

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
001.....	Ablatives.....	1705.....	Rocket warheads and explosive components.
		281.....	Guided missiles and space vehicles and parts.
002.....	Abrasives.....	03200.....	Carpentry.
		0323.....	Masonry, stonework, tile setting, and plastering.
		0325.....	Painting, paperhanging, and decorating.
		06.....	Fabricated metal products.
		10.....	Furniture and fixtures.
		113.....	Ophthalmic goods.
		114.....	Optical instruments and lenses.
		145.....	Metalworking machinery.
		164.....	Jewelry and silverware.
		25104.....	Scouring cleansers and presoaks.
		25114.....	Metal polish.
		2640.....	Abrasive products
0020.....	Blasting abrasives.....	04003.....	Office and public building cleaning and maintenance.
		06.....	Fabricated metal products.
		0645.....	Surface cleaning and conditioning.
0021.....	Grinding, lapping and polishing abrasives.	03200.....	Carpentry.
		0323.....	Masonry, stonework, tile setting, and plastering.
		0325.....	Painting, paperhanging, and decorating.
		06.....	Fabricated metal products.
		145.....	Metalworking machinery.
		164.....	Jewelry and silverware.
003.....	Absorbents.....	02.....	Chemicals.
		04030.....	Electric power generation, transmission, and distribution.
		04031.....	Gas transmission and distribution.
		154.....	Oil and gas extraction.
0030.....	Gas absorbents.....	02.....	Chemicals.
		04030.....	Electric power generation, transmission, and distribution.
		04031.....	Gas transmission and distribution.
		154.....	Oil and gas extraction.
0031.....	Liquid absorbents.....	0400.....	Cleaning and maintenance.
		0406.....	Research and development.
0032.....	Ultraviolet absorbents..	1304.....	Plastic-forming compounds.
		070.....	Miscellaneous fabricated plastic products.
004.....	Accelerators.....	1327.....	Rubber-forming compounds.
		071.....	Miscellaneous fabricated rubber products.
		073.....	Rubber and plastic footwear.
		074.....	Rubber and plastic hose and belting.
		075.....	Tires and inner tubes.
007.....	Activators.....	1381.....	Vulcanizing agents.
		211.....	Natural rubber.
		213.....	Plastic materials and resins.
		214.....	Synthetic rubber.
008.....	Adhesion promoters.....	1009.....	Adhesives.
		071.....	Miscellaneous fabricated rubber products.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
009	Adhesives	075	Tires and inner tubes.
		03	Construction.
		042	Repair work.
		0702	Laminated plastic sheet, rod, and tube.
		071	Miscellaneous fabricated rubber products.
		075	Tires and inner tubes.
		08	Fabricated textile products.
		10	Furniture and fixtures.
		121	Leather and fur products.
		132	Millwork, plywood and structural members.
		133	Mirror and picture frames.
		135	Prefabricated wood buildings.
		138	Wood containers.
		19	Paper and allied products.
012	Adsorbents	2301	Bookbinding.
		2730	Coated fabrics, except rubberized.
		2735	Nonwoven fabrics and products.
		02	Chemicals.
		0400	Cleaning and maintenance.
		0401	Commercial testing.
		0406	Research and development.
		04120	Drycleaning and dyeing.
		110	Engineering and scientific instruments.
		1484	Refrigeration, air-conditioning and heating equipment.
		1490	Chemical manufacturing and petroleum refining machinery.
		201	Petroleum cracking and other catalytic processes.
		203	Petroleum treatment.
		204	Waste oil recovery.
013	Aerating agents	02	Chemicals.
		0407	Sewerage treatment and refuse disposal.
014	Aerosol propellants	1264	Lachrymators.
		1309	Prespotting agents (drycleaning).
		030	Building construction.
		0325	Painting, paperhanging, and decorating.
		04001	Dwelling cleaning and maintenance.
		04002	Hospital cleaning and maintenance.
		04003	Office and public building cleaning and maintenance.
		04004	Service station cleaning and degreasing.
		0402	Disinfecting and exterminating.
		0413	Lodging.
		0420	Electrical repair work.
		0421	Furniture repair and refinishing work.
		0641	Coating.
		18	Paint and allied products.
015	Algicides	2511	Polishes and related products.
		2512	Specialty cleaners.
		04005	Swimming pool cleaning and maintenance.
		0408	Water supply.
		192	Paper mill products.
		195	Pulp mill products.
		0123	Horticultural specialties production.
		04001	Dwelling cleaning and maintenance.
		041	Personal applications.
		1304	Plastic-forming compounds.
		213	Plastic materials and resins.
		11331	Pigments.
		1206	Explosives.
		1210	Fertilizer conditioners.
030	Anticaking agents	151	Bituminous coal and lignite mining.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
		15304	Rock salt mining.
034	Anticracking agents	1327	Rubber-forming compounds.
035	Anticratering agents	0640	Brazing, welding, and soldering.
036	Anticracking agents	2702	Plain dyed and finished fibers, yarn and fabrics.
041	Antifelting agents	270	Finished textile products.
045	Antiflooding agents	1304	Plastic-forming compounds.
		18	Paint and allied products.
046	Antiflume agents	210	Cellulosic manmade fibers.
		212	Noncellulosic organic fibers.
		2702	Plain dyed and finished fibers, yarn and fabrics.
047	Antifogging agents	1304	Plastic forming compounds.
		0709	Unsupported plastic film, sheet, rod, and tube.
		1151	Silver halide photographic films, papers, and plates.
		1153	Photographic processing.
048	Antifouling agents	200	Petroleum blending and compounding.
049	Antifreezes	0321	Concrete work.
		1490	Chemical manufacturing and petroleum refining machinery.
		280	Aircraft and parts.
		282	Miscellaneous transportation equipment.
		283	Motor vehicles and equipment.
		284	Motorcycles, bicycles, and parts.
056	Antiknock agents	1233	Fuels.
069	Antipilling agents (textile technology).	270	Finished textile products.
		272	Knitting mill products.
070	Antiplasticizers	21	Plastic and rubber materials and synthetics (not fabricated).
071	Antiprotozoal agents		
0710	Amebicides	04080	Water purification.
075	Antisagging agents	18	Paint and allied products.
076	Antiscaling agents	221	Heat treated metals.
		228	Steel mill products.
077	Antiscorching agents	1327	Rubber-forming compounds.
079	Antiseptics	25123	Room deodorizers.
		25126	Toilet bowl cleaners and drain pipe solvents.
		25127	Wallpaper, window shade, and wall cleaners.
081	Antisettling agents	1137	Sealants.
		18	Paint and allied products.
082	Antiskid agents (paper technology).	213	Plastic materials and resins.
		192	Paper mill products.
		195	Pulp mill products.
083	Antiskinning agents	0404	Firefighting and prevention (building and general).
084	Antislip finishing agents	270	Finished textile products.
086	Antistaining agents	270	Do.
087	Antistatic agents	21	Plastic and rubber materials and synthetics (not fabricated).
		27	Textile mill products.
088	Antitack agents	1304	Plastic-forming compounds.
		0701	Industrial plastic products.
		0709	Unsupported plastic film, sheet, rod, and tube.
096	Bactericides	12441	Coolants.
		04005	Swimming pool cleaning and maintenance.
		18	Paint and allied products.
		19	Paper and allied products.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued

[In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
		21	Plastic and rubber materials and synthetics (not fabricated).
097	Bacteriostats	1233	Fuels.
		04002	Hospital cleaning and maintenance.
		04003	Office and public building cleaning and maintenance.
		04004	Service station cleaning and degreasing.
098	Binders	2510	Detergents, soaps and disinfectants.
		1524	Iron ore mining.
		222	Iron and steel foundry products.
		224	Nonferrous foundry products.
		27	Textile mill products.
099	Bleaches	19	Paper and allied products.
		25104	Scouring cleansers and presoaks.
		25121	Laundry and ironing aids.
		2700	Bleached and white finished fibers, yarn and fabrics.
100	Bleaching assistants	04122	Laundering.
		19	Paper and allied products.
		2700	Bleached and white finished fibers, yarn and fabrics.
101	Bloom inhibitors	1327	Rubber-forming Compounds
		071	Miscellaneous fabricated rubber products.
		214	Synthetic rubber.
102	Blowing agents	0700	Foamed plastic products.
		0718	Sponge and foam rubber goods.
1020	Air entraining agents ..	0321	Concrete work.
		0700	Foamed plastic products.
		0718	Sponge and foam rubber goods.
		260	Concrete, gypsum, and plaster products.
103	Bluing agents	04122	Laundering.
		19	Paper and allied products.
		2700	Bleached and white finished fibers, yarn and fabrics.
104	Boil-off assistants (textile technology).	2700	Bleached and white finished fibers, yarn and fabrics.
		2738	Scouring and combing mill products.
105	Bright dips	0422	Replating work.
		0641	Coating
106	Brighteners (electroplating).	1304	Plastic-forming compounds.
		0701	Industrial plastic products.
		0706	Plastic packaging and shipping containers.
108	Carbonizing agents	2738	Scouring and combing mill products.
110	Carriers	1112	Catalysts.
		021	Industrial organic chemicals.
		201	Petroleum cracking and other catalytic processes.
1100	Dye carriers	2702	Plain dyed and finished fibers, yarn and fabrics.
		2703	Printed and finished fabrics.
112	Catalysts	021	Industrial organic chemicals.
		201	Petroleum cracking and other catalytic processes.
		21	Plastic and rubber materials and synthetics (not fabricated).
114	Caulking compounds	283	Motor vehicles and equipment.
		03	Construction.
118	Chain extenders (polymerization).	042	Repair work.
		212	Noncellulosic organic fibers.
119	Chain stoppers (polymerization).	213	Plastic materials and resins.
		212	Noncellulosic organic fibers.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
[In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
120.....	Chain transfer agents.....	212.....	Noncellulosic organic fibers.
		213.....	Plastic materials and resins.
		214.....	Synthetic rubber.
121.....	Chemical intermediates.....	02.....	Chemicals.
1210.....	Inorganic intermediates.	020.....	Industrial inorganic chemicals.
1211.....	Organic intermediates.	021.....	Industrial organic chemicals.
		0212.....	Reagent and high purity grade chemicals.
1212.....	Polymerization intermediates.	21.....	Plastic and rubber materials and synthetics (not fabricated).
127.....	Clarifiers.....	02.....	Chemicals.
		0406.....	Research and development.
		0407.....	Sewerage treatment and refuse disposal.
		04080.....	Water purification.
		04081.....	Water softening.
		19.....	Paper and allied products.
129.....	Cloud point depressants.....	200.....	Petroleum blending and compounding.
130.....	Coagulants.....	0407.....	Sewerage treatment and refuse disposal.
		04080.....	Water purification.
		192.....	Paper mill products.
		195.....	Pulp mill products.
		211.....	Natural rubber.
		214.....	Synthetic rubber.
		2737.....	Processed textile waste.
131.....	Coalescents.....	0407.....	Sewerage treatment and refuse disposal.
		204.....	Waste oil recovery.
132.....	Coatings.....	0325.....	Painting, paperhanging, and decorating.
		042.....	Repair work.
		0641.....	Coating.
		19.....	Paper and allied products.
		2300.....	Book gilding, bronzing, etc.
		265.....	Pottery and related products.
133.....	Coloring agents.....		
1330.....	Dyes.....	1304.....	Plastic-forming compounds.
		07.....	Fabricated rubber and plastic products.
		1151.....	Silver halide photographic films, paper, and plates.
		1153.....	Nonsilver halide photo films, papers, and plates.
		12.....	Leather and fur.
		13.....	Lumber and wood products.
		1680.....	Art supplies.
		19.....	Paper and allied products.
		24.....	Printing ink.
		251.....	Polishes and sanitizing agents.
		266.....	Pressed or blown glass and glassware.
		2702.....	Plain dyed and finished fibers, yarn, and fabrics.
		2703.....	Printed and finished fabrics.
1331.....	Pigments.....	1304.....	Plastic-forming compounds.
		1327.....	Rubber-forming compounds.
		07.....	Fabricated rubber and plastic products.
		163.....	Hard surface floor, wall, and counter coverings.
		1680.....	Art supplies.
		18.....	Paint and allied products.
		19.....	Paper and allied products.
		21.....	Plastic and rubber materials and synthetics (not fabricated).
		24.....	Printing inks.
		265.....	Pottery and related products.
		266.....	Pressed or blown glass and glassware.
		267.....	Structural clay products.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued

[In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
136.....	Correction fluids (paper)....	2703.....	Printed and finished fabrics.
137.....	Corrosion inhibitors.....	1913.....	Envelope and stationery products.
		1303.....	Pickling inhibitors.
		0645.....	Surface cleaning and conditioning.
		1450.....	Automotive maintenance equipment.
		1484.....	Refrigeration, air-conditioning, and heating equipment.
138.....	Coupling agents.....	28.....	Transportation equipment and facilities.
		11330.....	Dyes.
		1151.....	Silver halide photographic films, paper, and plates.
		1153.....	Photographic processing.
		0211.....	Cyclic chemicals.
		21.....	Plastic and rubber materials and synthetics (not fabricated).
139.....	Crabbing assistants (textile technology).	270.....	Finished textile products.
140.....	Creaseproofing agents.....	2701.....	Other finished fibers, yarn, and fabrics.
141.....	Crosslinking agents.....	1307.....	Polymerization additives.
		21.....	Plastic and rubber materials and synthetics (not fabricated).
142.....	Curing agents.....	2701.....	Other finished fibers, yarn, and fabrics.
		21.....	Plastic and rubber materials and synthetics (not fabricated).
143.....	Currying agents (leather processing).	260.....	Concrete, gypsum, and plaster products.
144.....	De-inkers.....	270.....	Finished textile products.
145.....	Deaerating agents.....	120.....	Leather and fur finishing.
		195.....	Pulp mill products.
		1304.....	Plastic-forming compounds.
		04030.....	Electric power generating, transmission, and distribution.
146.....	Deasphalting agents.....	04080.....	Water purification.
147.....	Dechlorinating agents.....	203.....	Petroleum treatment, except blending, cracking, and distillation.
		04122.....	Laundering.
		195.....	Pulp mill products.
		2700.....	Bleached and white finished fibers, yarn, and fabrics.
1470.....	Antichlors.....	04122.....	Laundering.
		195.....	Pulp mill products.
		2700.....	Bleached and white finished fibers, yarn, and fabrics.
149.....	Decontaminants.....	02.....	Chemicals.
1490.....	Mercury decontaminants.	0407.....	Sewerage treatment and refuse disposal.
1491.....	Poison gas decontaminants.	17.....	Ordnance and accessories.
1492.....	Radioactivity decontaminants.	04030.....	Electric power generation, transmission, and distribution.
150.....	Defoamers.....	021.....	Industrial organic chemicals.
		0407.....	Sewerage treatment and refuse disposal.
		04080.....	Water purification.
		192.....	Paper mill products.
		195.....	Pulp mill products.
151.....	Defoliant.....	012.....	Crop production.
		014.....	Forestry.
		0311.....	Highways and streets.
		1700.....	Biological and chemical warfare agents.
153.....	Degreasers.....	0645.....	Surface cleaning and conditioning.
		1450.....	Automotive maintenance equipment.
		25103.....	Metal cleaners.
		2870.....	Transportation equipment service and repair facilities.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
(In increasing lexical order of function and application numbers)

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
154.....	Degummers.....	276.....	Yarn and thread mill products.
155.....	Dehairing agents (leather processing).	122.....	Leather and fur tanning.
156.....	Dehumidifiers.....	143.....	Electronic components and accessories.
		1440.....	Air and gas compressors and vacuum pumps.
		1484.....	Refrigeration, air-conditioning, and heating equipment.
157.....	Dehydrating agents.....	02.....	Chemicals.
		200.....	Petroleum blending and compounding.
		203.....	Petroleum treatment, except blending, cracking, and distillation.
158.....	Deicers.....	031.....	Construction, except building construction.
		280.....	Aircraft and parts.
		283.....	Motor vehicles and equipment.
		285.....	Railroad cars and equipment.
		286.....	Ships and boats.
		287.....	Transportation facilities.
159.....	Deionizers.....	02.....	Chemicals.
		04030.....	Electric power generation, transmission, and distribution.
		04080.....	Water purification.
		04081.....	Water softening.
160.....	Delignification agents.....	195.....	Pulp mill products.
161.....	Delustrants.....	270.....	Finished textile products.
		276.....	Yarn and thread mill products.
162.....	Demineralizers.....	02.....	Chemicals.
		04030.....	Electric power generation, transmission, and distribution.
		04081.....	Water softening.
163.....	Demulsifiers.....	021.....	Industrial organic chemicals.
		0407.....	Sewerage treatment and refuse disposal.
		204.....	Waste oil recovery.
164.....	Denaturants.....	021.....	Industrial organic chemicals.
166.....	Deodorants.....	25123.....	Room deodorizers.
		25126.....	Toilet bowl cleaners and drain pipe solvents.
1660.....	Masking agents (odors).	02.....	Chemicals.
		25123.....	Room deodorizers.
167.....	Dipitching agents.....	195.....	Pulp mill products.
169.....	Descaling agents.....	221.....	Heat treated metals.
		228.....	Steel mill products.
170.....	Desiccants.....	0212.....	Reagent and high purity grade chemicals.
		143.....	Electronic components and accessories.
		147.....	Office and computing machines.
		1484.....	Refrigeration, air-conditioning and heating equipment.
171.....	Desizing agents.....	0412.....	Laundry and drycleaning.
		273.....	Miscellaneous textile products.
172.....	Detackifiers.....	072.....	Reclaimed rubber.
		214.....	Synthetic rubber.
173.....	Detergent builders.....	2510.....	Detergents, soaps, and disinfectants.
		2512.....	Specialty cleaners.
174.....	Developers.....	1151.....	Silver halide photographic films, papers, and plates.
		1153.....	Photographic processing.
1740.....	Dye developers.....	2702.....	Plain dyed and finished fibers, yarn, and fabrics.
		2703.....	Printed and finished fabrics.
175.....	Devulcanizing agents.....	072.....	Reclaimed rubber.
		214.....	Synthetic rubber.
179.....	Discharge printing agents.....	2703.....	Printed and finished fabrics.
180.....	Disinfectants.....	0400.....	Cleaning and maintenance.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued

[In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
		0402	Disinfecting and exterminating.
		2510	Detergents, soaps, and disinfectants.
185	Drawing compounds	063	Metal forgings and stamping.
		0643	Machining.
186	Driers	180	Exterior oil base paint products.
		182	Industrial product finishes, except lacquer.
		183	Interior oil base paint products.
		186	Putty and allied products.
		24	Printing inks.
187	Drilling mud conditioners ..	1188	Drilling muds.
188	Drilling muds	154	Oil and gas extraction.
189	Dry strength agents	1915	Sanitary paper products.
		1924	Packaging and industrial converting paper.
		193	Paperboard containers and boxes.
		194	Paperboard mill products.
190	Dust control agents	02	Chemicals.
		0311	Highway and streets.
		0400	Cleaning and maintenance.
		0413	Lodging.
		2643	Ground or treated minerals.
191	Dusting agents (rubber technology).	071	Miscellaneous fabricated rubber products.
192	Dye reserving agents	2702	Plain dyed and finished fabrics.
		2703	Printed and finished fabrics.
193	Dye retardants	2702	Plain dyed and finished fibers, yarn, and fabrics.
		2703	Printed and finished fabrics.
194	Dye retention aids	2703	Do.
195	Electrolytes	020	Industrial inorganic chemicals.
		0641	Coating.
1950	Peptizing agents	211	Natural rubber.
		214	Synthetic rubber.
196	Eluting agents	02	Chemicals.
		04011	Chemical and medical testing.
		04080	Water purification.
		04081	Water softening.
		152	Metal mining.
199	Entraining agents	02	Chemicals.
200	Enzymes	25105	Soap bars and flakes, and soap and detergent powders.
202	Etching agents	1436	Semiconductors and related solid state devices.
		2311	Lithographic platemaking.
		2312	Photoengraving.
203	Evaporation control agents	02	Chemicals.
		0408	Water supply.
		20	Petroleum refining.
205	Explosion inhibitors	02	Chemicals.
		17	Ordnance and accessories.
		20	Petroleum refining.
206	Explosives		
2060	Blasting explosives	030	Building construction.
		031	Construction, except nuclear.
		15	Mining.
2061	Propellant explosives ..	170	Ammunition, except nuclear.
207	Extenders	1304	Plastic-forming compounds.
		1327	Rubber-forming compounds.
		18	Paint and allied products.
		265	Pottery and related products.
		267	Structural clay products.
210	Fertilizer conditioners	1211	Fertilizers.
211	Fertilizers	012	Crop production.
		014	Forestry.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
212	Fiber forming compounds	210	Cellulosic manmade fibers.
		212	Noncellulosic organic fibers.
213	Fillers (augmentation)	1009	Adhesives.
		1304	Plastic-forming compounds.
		1327	Rubber-forming compounds.
		18	Paint and allied products.
		19	Paper and allied products.
		21	Plastic and rubber materials and synthetics (not fabricated).
		24	Printing inks.
		2510	Detergents, soaps, and disinfectants.
		265	Pottery and related products.
		267	Structural clay products.
214	Fillers (patching)	030	Building construction.
		0320	Carpentry and flooring.
		0325	Painting, paperhanging, and decorating.
		0400	Cleaning and maintenance.
		0421	Furniture repair and refinishing work.
215	Filtration aids	02	Chemicals.
		0407	Sewerage treatment and refuse disposal.
		04080	Water purification.
		195	Pulp mill products.
217	Fire extinguishing agents	01410	Firefighting and prevention (forest).
		0404	Firefighting and prevention (building and general).
220	Flame retardants	070	Miscellaneous fabricated plastic products.
		0718	Sponge and foam rubber goods.
		08	Fabricated textile products.
		2701	Other finished fibers, yarn, and fabrics.
		271	Floor coverings (textile).
221	Flatting agents	18	Paint and allied products.
224	Flocculating agents	0407	Sewerage treatment and refuse disposal.
		04080	Water purification.
		195	Pulp mill products.
		211	Natural rubber.
		213	Plastic materials and resins.
		214	Synthetic rubber.
227	Fluxes		
2270	Brazing fluxes	0640	Brazing, welding, and soldering.
2271	Galvanizing fluxes	0641	Coating.
2272	Soldering fluxes	0326	Plumbing, heating, and air-conditioning work.
		0640	Brazing, welding, and soldering.
2273	Tinning fluxes	0326	Plumbing, heating, and air-conditioning work.
		0640	Brazing, welding, and soldering.
2274	Welding fluxes	0326	Plumbing, heating, and air-conditioning work.
228	Foam inhibitors	1362	Surfactants.
		02	Chemicals.
		0407	Sewerage treatment and refuse disposal.
		0408	Water supply.
		195	Pulp mill products.
230	Formation aids (paper technology).	192	Papermill products.
		193	Paperboard containers and products.
		194	Paperboard mill products.
232	Frothing agents	0404	Firefighting and prevention (building and general).
		0407	Sewerage treatment and refuse disposal.
		152	Metal mining.
		204	Waste oil recovery.
233	Fuels	1444	Industrial furnaces and ovens.
		1484	Refrigeration, air-conditioning, and heating equipment.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued

[In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
		1490	Chemical manufacturing and petroleum refining machinery.
		1494	Foundry and other primary metal machinery.
		28	Transportation equipment and facilities.
234	Fulling agents	275	Weaving mill products.
236	Fungicides	1304	Plastic forming compounds.
		0412	Laundry and drycleaning.
		07	Fabricated rubber and plastic products.
		18	Paint and allied products.
		19	Paper and allied products.
		230	Bookbinding and related operation.
		2510	Detergents, soaps, and disinfectants.
		260	Concrete, gypsum, and plaster products.
237	Fungistats	08	Fabricated textile products.
2370	Mildew preventives	0400	Cleaning and maintenance.
		08	Fabricated textile products.
		230	Bookbinding and related operations.
		2512	Specialty cleaners.
2371	Mold inhibitors	08	Fabricated textile products.
		230	Bookbinding and related operations.
239	Gelling agents	1009	Adhesives.
		1327	Rubber-forming compounds.
		18	Paint and allied products.
		200	Petroleum blending and compounding.
		213	Plastic materials and resins.
241	Greaseproofing agents	1910	Bags, except textile bags.
		19112	Laminated or coated paper rolls and sheets.
		19113	Oiled, waxed, and wax-laminated paper.
		1924	Packaging and industrial converting paper.
		2701	Other finished fibers, yarn, and fabrics.
		271	Floor coverings (textile).
243	Heat sealing agents	1009	Adhesives.
		0709	Unsupported plastic film, sheet, rod, and tube.
		08	Fabricated textile products.
		191	Miscellaneous converted paper products.
		193	Paperboard containers and boxes.
244	Heat transfer agents		
2440	Calefactants	02	Chemicals.
		07	Fabricated rubber and plastic products.
		20	Petroleum refining.
2441	Coolants	064	Metal processing operations.
		221	Heat treated metals.
		28	Transportation equipment and facilities.
2442	Refrigerants	02	Chemicals.
		1484	Refrigeration, air-conditioning and heating equipment.
251	Humidity indicators	1157	Dehydrating agents.
		143	Electronic components and accessories.
252	Hydraulic fluids	14	Machinery and equipment.
		22	Primary metals.
2520	Automatic transmission fluids	14	Machinery and equipment.
		28	Transportation equipment and facilities.
256	Incendiaries	170	Ammunition, except nuclear.
257	Inflating agents (rubber technology)	0700	Foamed plastic products.
		0718	Sponge and foam rubber goods.
259	Insect repellents	041	Personal applications.
2590	Mothproofing agents	04120	Drycleaning and dyeing.
		04123	Rug and upholstery cleaning.
		080	Apparel.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued

[In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
260	Insulating compounds.....	271	Floor coverings (textile)
2600	Acoustical insulating compounds.	030	Building construction.
		144	General industrial machinery.
		145	Metalworking machinery.
		1491	Construction and related machinery.
2601	Electrical insulating compounds.	030	Building construction.
		142	Electric transmission and distribution equipment.
		1460	Appliance wire and cord and flexible cord sets.
		1461	Electrical industrial apparatus.
		1462	Engine electrical equipment.
		147	Office and computing machines.
2602	Heat insulating compounds.	02	Chemicals.
		030	Building construction.
		0403	Electric and gas supply.
		148	Refrigeration and service machinery.
		149	Special industry machinery.
		20	Petroleum refining.
261	Intensifiers.....	231	Printing operation.
		1153	Photographic processing.
2610	Dye intensifiers.....	11541	Color film and plates.
		2702	Plain dyed and finished fibers, yarn, and fabrics.
		2703	Printed and finished fabrics.
262	Ion exchange compounds...	02	Chemicals.
		04030	Electric power generation, transmission and distribution.
		04080	Water purification
		04081	Water softening.
263	Kier assistants (textile technology.	270	Finished textile products.
264	Lachrymators.....	0405	Law enforcement.
		1700	Biological and chemical warfare agents.
265	Laminating agents.....	0702	Laminated plastic sheet, rod, and tube.
		132	Millwork, plywood, and structural members.
		19112	Laminated or coated-paper rolls and sheets (packaging applications).
		2730	Coated fabrics, except rubberized.
		2735	Nonwoven fabrics and products.
		2739	Tire cord and fabrics.
266	Laundry soaps.....	04122	Laundrying.
		2700	Bleached and white finished fibers, yarn, and fabrics.
269	Leveling agents.....		
2690	Dye leveling agents	19	Paper and allied products.
		2702	Plain dyed and finished fibers, yarn, and fabrics.
		2703	Printed and finished fabrics.
2691	Vulcanization leveling agents.	1381	Vulcanizing agents.
		071	Miscellaneous fabricated rubber products.
271	Lubricant additives.....	200	Petroleum blending and compounding.
272	Lubricants.....	14	Machinery and equipment.
		28	Transportation equipment and facilities.
2720	Extreme pressure lubricants.	14	Machinery and equipment.
2721	High temperature lubricants.	1463	Engines and turbines.
2722	Internal lubricants.....	1304	Plastic forming compounds.

APPENDIX I.—*Chemical use list, function/application use term combinations*—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
273	Markers (textile)	070	Miscellaneous fabricated plastic products.
		04122	Laundrying.
		080	Apparel.
275	Mercerizing agents	2701	Other finished fibers, yarn, and fabrics.
276	Metal conditioners	0641	Coating.
		0645	Surface cleaning and conditioning.
277	Microbiological culture media.	02	Chemicals.
		04011	Chemical and medical testing.
		0407	Sewerage treatment and refuse disposal.
278	Mordants	2702	Plain dyed and finished fibers, yarn, and fabrics.
		2703	Printed and finished fabrics.
282	Nucleating agents	02	Chemicals.
283	Nutrient		
2830	Bacteriological nutrients.	02	Chemicals.
		04011	Chemical and medical testing.
		0407	Sewerage treatment and refuse disposal.
284	Obscuring agents	1700	Biological and chemical warfare agents.
285	Odorants	04031	Gas transmission and distribution.
		251	Polishes and sanitizing agents.
286	Oil repellents	19112	Laminated or coated-paper rolls and sheets.
		1925	Special industrial paper.
		2701	Other finished fibers, yarn, and fabrics.
287	Oiliness agents	1272	Lubricants.
288	Opacifiers	0641	Coating.
		0709	Unsupported plastic film, sheet, rod, and tube.
		192	Paper mill products.
		262	Flat glass products.
		265	Pottery and related products.
		266	Pressed or blown glass and glassware.
290	Optical brighteners	04122	Laundrying.
		18	Paint and allied products.
		19	Paper and allied products.
		2700	Bleached and white finished fibers, yarn and fabrics.
293	Oxidation inhibitors	11212	Polymerization intermediates.
		200	Petroleum blending and compounding.
		21	Plastic and rubber materials and synthetics (not fabricated).
294	Oxidation-reduction indicators.	0212	Reagent and high purity grade chemicals.
295	Oxidizers	1705	Rocket warheads and explosive components.
		281	Guided missiles and space vehicles and parts.
296	Ozonation inhibitors	11212	Polymerization intermediates.
		1326	Rubber compounding agents.
		071	Miscellaneous fabricated rubber products.
298	Pearlizing agents	164	Jewelry and silverware.
		18	Paint and allied products.
300	pH control agents	02	Chemicals.
		0407	Sewerage treatment and refuse disposal.
		0408	Water supply.
301	pH indicators	04011	Chemical and medical testing.
302	Pickling agents	0645	Surface cleaning and conditioning.
		1490	Chemical manufacturing and petroleum refining machinery.
		228	Steel mill products.
303	Pickling inhibitors	0645	Surface cleaning and conditioning.
		1490	Chemical manufacturing and petroleum refining machinery.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
304	Plastic-forming compounds.	228	Steel mill products.
305	Plasticizers	070	Miscellaneous fabricated plastic products.
308	Polymerization inhibitors	1304	Plastic-forming compounds.
309	Prespotting agents (drycleaning).	213	Plastic materials and resins.
310	Preservatives	212	Noncellulosic organic fibers.
311	Prevulcanization inhibitors.	213	Plastic materials and resins.
312	Protective agents	214	Synthetic rubber.
315	Pulping retention aids	04120	Drycleaning and dyeing.
316	Radiation protective agents.	136	Preserved wood.
318	Reaction media	1680	Art supplies.
319	Reducers (chemical technology).	19	Paper and allied products.
320	Refining agents (nonpetroleum oils and fats).	2301	Bookbinding.
321	Reinforcing agents	1326	Rubber compounding agents.
322	Repulping aids	214	Synthetic rubber.
323	Resists	270	Finished textile products.
325	Rotproofing agents	2701	Other finished fibers, yarn, and fabrics.
327	Rubber-forming compounds.	2738	Scouring and combing mill products.
328	Rubber reclaiming agents	195	Pulp mill products.
329	Rubbing fastness agents (textile technology).	0212	Reagent and high purity grade chemicals.
331	Rust inhibitors	04011	Chemical and medical testing.
332	Rust removers	04014	Radiation detection and dosimetry.
333	Scavengers	04030	Electric power generation, transmission, and distribution.
335	Scouring agents	02	Chemicals.)
336	Scrooping agents	02	Do.
337	Sealants	093	Fat and oil products (inedible).
338	Semiconductors	1327	Rubber-forming compounds.
339	Sequestrants	07	Fabricated rubber and plastic products.
		195	Pulp mill products.
		1436	Semiconductors and related solid state devices.
		2312	Photoengraving.
		2701	Other finished fibers, yarn, and fabrics.
		071	Miscellaneous fabricated rubber products.
		073	Rubber and plastic footwear.
		074	Rubber and plastic hose and belting.
		075	Tires and inner tubes.
		072	Reclaimed rubber.
		270	Finished textile products.
		0641	Coating.
		0645	Surface cleaning and conditioning.
		220	Blast furnace and electric furnace products.
		222	Iron and steel foundry products.
		223	Metal powders and pastes.
		224	Nonferrous foundry products.
		228	Steel mill products.
		2738	Scouring and combing mill products.
		2701	Other finished fibers, yarn, and fabrics.
		03	Construction.
		062	Metal cans and shipping containers.
		28	Transportation equipment and facilities.
		1436	Semiconductors and related solid state devices.
		012	Crop production.
		0408	Water supply.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
		251	Polishes and sanitizing agents.
340	Shrinkage controllers	2701	Other finishes fibers, yarn, and fabrics.
341	Sizes	04122	Laundrying.
		2701	Other finished fibers, yarn, and fabrics.
342	Slime preventives	0408	Water supply.
		192	Paper mill products.
		195	Pulp mill products.
344	Soaking agents (textile technology).	2700	Bleached and white finished fibers, yarn, and fabrics.
		2701	Other finished fibers, yarn, and fabrics.
345	Soap builders	2510	Detergents, soaps, and disinfectants.
		2512	Specialty cleaners.
346	Soaping agents (printing and dyed).	2702	Plain dyed and finished fibers, yarn, and fabrics.
		2703	Printed and finished fabrics.
347	Soaping-off assistants	2702	Plain dyed and finished fibers, yarn and fabrics.
		2703	Printed and finished fabrics.
348	Softeners	04081	Water softening.
		04122	Laundrying.
		270	Finished textile products.
349	Soil conditioners	012	Crop production.
350	Soil release agents	04122	Laundrying.
		2701	Other finished fibers, yarn and fabrics.
351	Soil retardants	08	Fabricated textile products.
		2701	Other finished fibers, yarn, and fabrics.
352	Solvents	1009	Adhesives.
		02	Chemicals.
		0406	Research and development.
		0412	Laundry and drycleaning.
		042	Repair work.
		0421	Furniture repair and refinishing work.
		07	Fabricated rubber and plastic products.
		154	Oil and gas extraction.
		1680	Art supplies.
		18	Paint and allied products.
		20	Petroleum refining.
		21	Plastic and rubber materials and synthetics (not fabricated).
		231	Printing operations.
		24	Printing inks.
		2511	Polishes and related products.
353	Spreading agents	1299	Pesticides.
		012	Crop production.
354	Stabilizers	1009	Adhesives.
3540	Emulsion stabilizers	0404	Firefighting and prevention (building and general).
		213	Plastic materials and resins.
		214	Synthetic rubber.
		2511	Polishes and related products.
		2730	Coated fabrics, except rubberized.
3541	Foam stabilizers	0404	Firefighting and prevention (building and general)
		0700	Foamed plastic products.
		0718	Sponge and foam rubber goods.
3542	Heat stabilizers	1304	Plastic-forming compounds.
		0701	Industrial plastic products.
		0709	Unsupported plastic film, sheet, rod, and tube.
355	Stains	04011	Chemical and medical testing.
		10	Furniture and fixtures.
		120	Leather and fur finishing.
		1805	Stains (exterior).
		1831	Stains (interior).

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 [In increasing lexical order of function and application numbers]

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
356.....	Starch improvers.....	2701.....	Other finished fibers, yarn, and fabrics.
357.....	Stiffening agents.....	1327.....	Rubber-forming compounds.
		07.....	Fabricated rubber and plastic products.
358.....	Strippers.....		
3580.....	Dye strippers.....	0410.....	Beauty and barber shop services.
		04120.....	Drycleaning and dyeing.
		2702.....	Plain dyed and finished fibers, yarn, and fabrics.
3581.....	Paint strippers.....	0325.....	Painting, paperhanging, and decorating.
		0421.....	Furniture repair and refinishing work.
		0645.....	Surface cleaning and conditioning.
3582.....	Wax strippers.....	0400.....	Cleaning and maintenance.
		0642.....	Engraving and etching, except for printing.
		0645.....	Surface cleaning and conditioning.
		1436.....	Semiconductors and related solid state devices.
		2312.....	Photoengraving.
359.....	Structural binders.....	0321.....	Concrete work.
		0323.....	Masonry, stonework, tile setting, and plastering.
360.....	Structural components.....	03.....	Construction.
		061.....	Fabricated structural metal products.
362.....	Surfactants.....		
3620.....	Detergents.....	0400.....	Cleaning and maintenance.
		0412.....	Laundry and drycleaning.
		251.....	Polishes and sanitizing agents.
		270.....	Finished textile products.
3621.....	Dispersants.....	1133.....	Coloring agents.
		18.....	Paint and allied products.
		192.....	Paper mill products.
		213.....	Plastic materials and resins.
		214.....	Synthetic rubber.
		270.....	Finished textile products.
3622.....	Emulsifiers.....	1133.....	Coloring agents.
		181.....	Exterior water base paint products.
		184.....	Interior water base paint products.
		1911.....	Coated and glazed paper products.
		213.....	Plastic materials and resins.
		214.....	Synthetic rubber.
		2510.....	Detergents, soaps, and disinfectants.
		2511.....	Polishes and related cleaners.
		270.....	Finished textile products.
3623.....	Flotation agents.....	152.....	Metal mining.
3624.....	Penetrants.....	270.....	Finished textile products.
3625.....	Rinse aids.....	04122.....	Laundrying.
		270.....	Finished textile products.
3626.....	Soil suspending agents.....	2510.....	Detergents, soaps, and disinfectants.
3627.....	Wetting agents.....	1210.....	Fertilizer conditioners.
		1299.....	Pesticides.
		120.....	Leather and fur finishing.
		122.....	Leather and fur tanning.
		19.....	Paper and allied products.
		24.....	Printing inks.
		270.....	Finished textile products.
363.....	Swelling agents.....	072.....	Reclaimed rubber.
364.....	Tackifiers.....	1009.....	Adhesives.
		072.....	Reclaimed rubber.
365.....	Tanning agents.....	122.....	Leather and fur tanning.
3650.....	Bates.....	122.....	Do.
366.....	Tar removers.....	0400.....	Cleaning and maintenance.
		0412.....	Laundry and drycleaning.
367.....	Tarnish removers.....	0645.....	Surface cleaning and conditions.
		164.....	Jewelry and silverware.

APPENDIX I.—Chemical use list, function/application use term combinations—Continued
 (In increasing lexical order of function and application numbers)

Function component		Application component	
Function code No.	Descriptor	Application code No.	Descriptor
368.....	Textile conditioners.....	210.....	Cellulosic manmade fibers.
		212.....	Noncellulosic organic fibers.
		270.....	Finished textile products.
369.....	Texturizers.....	2701.....	Other finished fibers, yarn, and fabrics.
370.....	Thickeners.....	0407.....	Sewerage treatment and refuse disposal.
		152.....	Metal mining.
		153.....	Nonmetallic mineral mining and quarrying, except fuels.
		18.....	Paint and allied products.
		200.....	Petroleum blending and compounding.
		270.....	Finished textile products.
		2730.....	Coated fabrics, except rubberized.
372.....	Toners.....	1151.....	Silver halide photographic films, papers, and plates.
		1152.....	Nonsilver halide photographic films, plates, paper, including electrophotography.
		24.....	Printing inks.
		2702.....	Plain dyed and finished fibers, yarn, and fabrics.
		2703.....	Printed and finished fabrics.
379.....	Vat printing assistants.....	2703.....	Do.
380.....	Viscosity adjustors.....	1304.....	Plastic-forming compounds.
		0641.....	Coating.
		0701.....	Industrial plastic products.
		167.....	Toys and sporting goods.
3800.....	Thixotropic agents.....	18.....	Paint and allied products.
		200.....	Petroleum blending and compounding.
		24.....	Printing inks.
3801.....	Viscosity depressants.....	1304.....	Plastic-forming compounds.
		0641.....	Coating.
		200.....	Petroleum blending and compounding.
3802.....	Viscosity improvers.....	200.....	Do.
381.....	Vulcanizing agents.....	1327.....	Rubber-forming compounds.
		211.....	Natural rubber.
		214.....	Synthetic rubber.
382.....	Water repellents.....	0801.....	Miscellaneous, apparel and accessories.
		120.....	Leather and fur finishing.
		1910.....	Bags, except textile bags.
		1911.....	Coated and glazed paper products.
		2701.....	Other finished fibers, yarn, and fabrics.
383.....	Waterproofing agents.....	0801.....	Miscellaneous, apparel and accessories.
		120.....	Leather and fur finishing.
		1910.....	Bags, except textile bags.
		1911.....	Coated and glazed paper products.
		2701.....	Other finished fibers, yarn, and fabrics.
384.....	Weighing agents.....	2701.....	Other finished fibers, yarn, and fabrics.
385.....	Wet strength agents.....	1912.....	Die-cut paper and board products.
		1914.....	Pressed and molded pulp goods.
		1915.....	Sanitary paper goods.

APPENDIX II.—Alphabetical list of chemical use functions (with associated code numbers and illustrative definitions)

Abherents

See: Lubricants 272

Ablatives 001

Materials that are applied as a layer to a substrate, usually metal, to protect it from heat by dissipating the heat through the process of erosion, melting, or vaporization of the material.

Abrasives 002

Materials used for grinding, cleaning, polishing, or wearing down the surfaces of products made of metal, glass, wood, plastics, stone, or other substances.

See also: Scouring agents 335

Absorbents 003

Materials that assimilate another substance by various means such as: capillary, osmotic, solvent, or chemical action frequently used for the purposes of separation or purification.

Absorbers

See: Absorbents 003

Accelerators 004

Materials that increase the velocity of a chemical reaction, frequently acting in conjunction with a catalyst or curing agent, and may additionally improve the physical properties of the reaction products.

See also: Catalyst 112

Acid pickling indicators 005

Acoustical insulating compounds 2600

Materials that conduct sound poorly, thus acting as a barrier to sound.

Activators 007

Substances that render a material or a system reactive, used in processes such as polymerization or vulcanization. (Other uses include substances employed in the flotation process, for the impurity atoms in luminescent solids, for the substances that change proenzymes into enzymes.)

See also: Catalysts 112

Additives

See specific category: e.g., Driers, Extenders, Fillers, Opacifiers, Plasticizers, Preservatives.

Adhesion promoters 008

Materials that increase the adhesive properties of other compounds often applied to the surface(s) before coating with the adhesives.

Adhesive fillers

See: Fillers (augmentation) 213

Adhesive Tackifiers

See: Tackifiers 374

Adhesives 009

Substances that are capable of bonding materials together by surface attachment.

See also: Binders 098, Heat sealing agents 243, Sealants 337, Structural binders 359

Adsorbents 012

Materials that hold or concentrate the molecules of other substances (solids, liquids, gases, or solutes) upon their surfaces.

See also: Deodorants 166, Desiccants 170

Aerating agents 013

See: Air entraining agents 1020

Aerosol propellants 014

Compressed gases within which liquid or solid particles are suspended and carried from a container upon release of the internal pressure and expansion of the gas through the valve of the container.

Air entraining agents 1020

Materials that aid in the entrapment of air in a mixture.

See also: Aerating agents 013, Flocculating agents 224

Algicides 015

Chemicals used to kill algae.

Animal repellents 021

Chemicals that drive animals away from the area of application.

Antibacterials

See: Bactericides 096, Bacteriostats 097

Antiblocking agents 029

Materials that are added to plastic resin formulations to (1) prevent the final product from adhering to itself or other materials, or (2) prevent the undesired adhesion of granular particles which often occurs with damp powders or plastic pellets in storage bins or during movement through conduits.

Antibloom agents

See: Bloom inhibitors 101

Anticaking agents 030

Materials that prevent ground materials from sticking or caking during transfer, storage, or use.

Antichlors 1470

Chemicals used to destroy the residual or free chlorine on textile products or wood pulp after bleaching.

Anticorrosion agents

See: Corrosion inhibitors 137

Anticracking agents 034

Materials added to rubber to prevent cracking (sun checking) of the finished product.

Anticratering agents 035

Materials that, when added to paint or coating formulations, prevent "fish eyes" or the "alligating" of the dried surface.

Anticreasing agents

See: Creaseproofing agents 140

Antifelting agents 041

Materials that are applied to textile fibers to prevent their "felting" or forming a mat during processing.

Antiflooding agents 045

Materials that prevent color separation in paints and allied products.

Antifume agents 046

Materials that prevent deterioration of textiles by atmospheric fumes.

Antifoaming agents

See: Defoamers 150

Antifogging agents 047

Materials that are, for example: (1) added to plastic forming compounds to prevent discoloring of the final product upon aging, (2) used to prevent the condensation of moisture on glass and other transparent materials, or (3) used in image forming systems to prevent the development of "non-image" density.

Antifouling agents 048

Materials added to petroleum products to prevent the formation of sludge.

Antifreezes 049

Materials that are added to liquids to lower the freezing point.

Antifrosting agents

See: Anticracking agents 034

Antifrothing agents

See: Defoamers 150

Antiknock agents 056

Chemicals that are added to fuels to prevent spontaneous deterioration in internal combustion engines.

Antimist agents

See: Antifogging agents 047

Antioxidants

See: Oxidation inhibitors 293

Antiozonants

See: Ozonation inhibitors 296

Antipilling agents (textile technology) 069

Chemicals that are added to textiles during processing of finishing that reduce the tendency of the fibers to "ball up" (pill).

Antiplasticizers 070

Chemicals added to plastic formulations to prevent softening or flexibility of the plastic.

Antirusting agents

See: Rust inhibitors 331

Antisagging agents 075

Materials added to paints or allied products to prevent "alligating".

Antiscaling agents 076

Any chemical or chemical solution which prevents scale from forming or removes scale from metal surfaces.

See also: Descaling agents 169

Antiscorching agents 007

Chemicals that are added to rubber formulations to prevent prevulcanization in the mold.

Antiseptics 079

Substances used to retard or stop the growth of microorganisms on or in the bodies of animals.

See also: Disinfectants 180

Antisettling agents 081

Materials that are added to paints, sealants, adhesives, plastic emulsions, and latices to preserve the dispersed state of the formulation.

Antiskid agents (paper technology) 082

Materials that are added to paper during or after the formation of paper stock to prevent slippage of bags, cartons, or boxes when stacked.

Antislime agents

See: Slime preventatives 342

Antislip finishing agents 084

Materials that are applied to textile fibers or yarns to prevent slippage during weaving.

Antistaining agents 086

Materials added to any manufacturing or processing step to impart stain resis-

tance to or eliminate staining of the finished product.

See also: Soil retardants 351

Antistatic agents 987

Materials used with textiles, plastics, paper products, wax polishes, etc. to reduce static electrical charges by allowing the charge to leak off the substance.

Antitack agents 088

Chemicals that, when added at any processing stage, will reduce or eliminate stickiness or adhesiveness of a product.

Assistants

See: Bleaching assistants 100, Boil-off assistants (textile technology) 104, Crabbing assistants (textile technology) 139, Dye retention aids 194, Filtration aids 215, Formation aids (paper technology) 230, Formulation aids 231, Kier assistants (textile technology) 263, Pulp retention aids 315, Repulping aids 322, Rinse aids 3625, Soaping-off assistants 347, Vat printing assistants 379, Automatic transmission fluids 2520

Non-corrosive fluids used as a fluid coupling to transmit power between an engine or motor drive and driven equipment.

Bactericides 096

Chemicals used to destroy bacteria.

See also: Antibiotics 028, Bacteriostats 097

Bacteriocidal cleaners 0960**Bacteriological culture Media**

See: Microbiological culture media 277

Bacteriological nutrients 2830

Substances that are necessary for the growth of bacteria.

See also: Microbiological culture media 277

Bacteriostats 097

Chemicals that inhibit bacterial growth.

See also: Antibiotics 028, Bactericides 096

Bates 3650

Materials used in the leather industry to remove lime from skins and to make them soft and flaccid before tanning by bringing the collagen into a flaccid or unswollen condition.

Binders 098

Resins or other cement-like materials used to hold particles together and provide mechanical strength or to ensure uniform consistency, solidification, or adhesion to a surface coating.

See also: Adhesives 009, Structural binders 359

Biological process catalysts 112

See: Enzymes 200, Catalysts 112

Biological stains

See: Stains 355

Blasting abrasives 0020

Materials entrained in a high velocity stream of air used to clean or finish surfaces.

Blasting explosives 2060

Chemical compounds, usually containing nitrogen, that detonate as a result of shock or heat.

Bleaches 099

Chemicals that whiten or decolorize materials by oxidation or reduction.

See also: Bluing agents 103, Optical brighteners 290

Bleaching assistants 100

Chemicals used in a bleach bath to promote penetration by the bleach and improve bleaching action.

Bloom inhibitors 101

Materials that (1) prevent the migration of an ingredient of a mixture to the surface, and (2) eliminate the fluorescence of oils.

- Blowing agents** 102
Chemicals added to other materials to produce a foam or a cellular structure by the evolution and the expansion of gases.
See also: Inflating agents (rubber technology) 250
- Blowmolding compounds**
See: Plastic forming compounds 304
- Bluing agents** 103
Substances that whiten paper textiles or other organic materials by neutralizing the yellow cast.
See also: Optical brighteners 290, Bleaches 099
- Boil-off assistants (textile technology)** 104
Chemicals that remove soil resulting from processing, from textile products.
- Bonding agents**
See: Adhesives 009
- Booster explosives**
See: Blasting explosives 2060
- Brazing fluxes** 2270
Materials used to remove oxides from, and clean the surface of metals to facilitate their joining by fusion.
- Bright dips** 105
A chemical or mixture of chemicals, into which metals are immersed to produce a bright, clean surface.
- Brighteners**
See: Brighteners (electroplating) 106, Optical brighteners 290
- Brighteners (electroplating)** 106
(1) Agents added to formulated mixtures, textiles, paper, etc. that effect a whitening of yellow, brown, or gray tones by converting ultraviolet radiation into blue and green light. (2) Chemicals added to an electroplating bath to yield a smoother, brighter surface.
See also: Optical brighteners 290
- Briquette binders**
See: Binders 098
- Buffers**
See: PH Control agents 300
- Builders**
See: Detergent builders 173, Soap builders 345
- Building Materials**
See: Structural binders 359, Structural components 360
- Calefactants** 240
Fluids used to transmit heat from a hot source to a heat absorber.
- Calendering compounds**
See: Plastic forming compounds 304
- Carbonizing agents** 108
A chemical or mixture of chemicals that remove cellulose from wool.
- Carriers** 110
(1) Inert materials used to support a catalyst in a large scale reaction system. (2) A substance that carries another substance through a chemical or physical process.
- Catalysts** 112
Substances that alter the velocity of a chemical reaction but undergo no chemical change themselves.
See also: Accelerators 004, Activators 007, Enzymes 200
- Caulking compounds** 114
Any product used to fill gaps in seams and joints between two surfaces to prevent the passage of liquids, air, or gases.
See also: Sealants 328
- Cement curing agents**
See: Curing Agents
- Ceramic body and slip stains**
See: Stains 355
- Chain extenders (polymerization)** 118
Chemicals that increase the length of a molecular chain.
- Chain stoppers (polymerization)** 119
Chemicals that limit or terminate the growth of a molecular chain.
See also: Polymerization inhibitors 308
- Chain transfer agents** 120
Chemicals that interrupt the growth of a molecular chain by forming a new radical that acts as a nucleus for a new chain.
- Chelating agents** 3390
See: Softeners 348
- Chemical intermediates** 121
Chemical compounds that are formed in the sequence of chemical reactions between starting materials and a product.
- Chemical process solvents**
See: Reaction Media 318
- Clarifiers** 127
Chemicals that remove turbidity from solutions.
See also: Flocculating agents 224
- Cleaners** 128
- Cleaning bleaches**
See: Bleaches 099
- Cleansing agents**
See: Cleaners 128
- Cloud point depressants** 129
- Coagulants** 130
Substances that induce the aggregation or precipitation of particles from a dispersed state.
See also: Coalescents 131, Flocculating agents 224
- Coalescents** 131
Substances that induce the union of small droplets of a suspended liquid to form a larger droplet.
See also: Coagulants 130
- Coalescing agents**
See: Coalescents 131
- Coatings** 132
Materials that form a continuous film over a substrate.
See also: Specific finishing agents.
- Color fixatives**
See: Fixatives 219
- Color retention aids**
See: Dye retention aids 194
- Coloring agents** 133
- Complexing agents** 3391
- Concrete and cement curing agents**
See: Curing agents 142
- Conditioners**
See: Drilling mud conditioners 187, Fertilizer conditioners 210, Food conditioners 229, Metal conditioners 276, Textile conditioners 368
- Cone and Mold Binders**
See: Binders 098
- Construction materials**
See: Structural binders 359, Structural components 360
- Coolants** 2441
Fluids that, without undergoing a phase change, remove heat from materials or exothermic reactions.
- Core binders**
See: Binders 098
- Correction fluids (paper)** 136
Formulated liquid products, usually opaque, used to delete or mask errors in typed or handwritten texts.
- Corrosion inhibitors** 137
Materials used to prevent or retard the gradual destruction of a metal or alloy because of a reaction; such as oxidation, with its environment, electrolytic solutions, solvent action, or other chemical agents.
- Coupling agents** 138
Chemicals that (1) combine with compounds, such as diazonium compounds to produce dyes, (2) lead to the formation of high molecular weight polymers when used with cyclic chemicals, or (3) prevent glass fiber laminates from absorbing water.
- Crabbing assistants (textile technology)** 139
Chemicals that assist in the textile finishing process that set warp and weft threads.
- Crease-resist finishing agents**
See: Creaseproofing agents 140
- Creaseproofing agents** 140
Chemicals that impart wrinkle resistance to a fabric.
- Crosslinking agents** 141
Chemicals that promote the formation of structural links between the chains of a polymeric substance or between polymer molecules and other substances.
- Curing agents**
Substances that change the properties of a resin by a chemical reaction such as addition or condensation; usually accomplished in the presence of heat or a catalyst and sometimes under pressure.
- Currying agents (leather processing)** 143
An emulsion or a solution that promotes the loading of leather with oils or fats.
- Cutting fluids**
See: Coolants 2441
- Cutting oils**
See: Coolants 2441, Lubricants 272
- Deinkers** 144
Chemicals used to remove ink from paper.
- Deaerating agents** 145
Chemicals used to remove gases or mixtures of gases from processing streams, reaction vessels, feed water, etc.
- Deasphalting agents** 146
A solvent used to remove asphalt traces from petroleum after the routine asphalt removal process.
- Dechlorinating agents** 147
Chemicals used to destroy the residual or free chlorine remaining on textile products or wood pulp after bleaching.
- Decolorizing agents**
See: Bleaches 099
- Decontaminants** 149
- Defoamers** 150
Any chemical used to reduce or eliminate frothing or foaming in any treatment or process.
- Defoliant** 151
Any chemical that prematurely causes leaves to fall from flora such as trees and shrubs.
- Degreasers** 153
Chemicals that will remove grease.
- Degummers** 154
Chemicals used to dissolve and remove gum-like substances, for example used for removing sericin, a glue-like substance, from silk.
- Dehairing agents** 155
Chemicals used to remove hair from hides.
- Dehumidifiers** 156
Chemicals used to remove water vapor from the ambient atmosphere.
See also: Desiccants 170
- Dehydrating agents** 157
Chemicals used to remove water from a substance.
See also: Desiccants 170
- Deicers** 158
Chemicals used to remove ice from, or prevent its accumulation on, a surface.
- Deionizers** 159
Chemicals that remove or recover ions from gases or solutions.
See also: Demineralizers 162
- Delignification Agents** 160
A chemical that removes lignin from cellulosic materials.

Deliquescent

See: Dehumidifiers 156

Delustrants 161

Chemicals that are used to reduce or eliminate the gloss or sheen on textile fibers, yarns, and fabrics.

Demineralizers 162

A chemical or solutions of chemicals used to remove mineral constituents from water.

See also: Deionizers 159

Demulsifiers 163

A chemical that is used to destroy (break) an emulsion or prevent its formation.

Denaturants 164

Any inert, nauseating, or poisonous chemical added to a product (such as ethyl alcohol) to make it unfit for human consumption.

Deodorants 166

Any substance used to remove or repress undesirable odors.

See also: Antiperspirants 068, Refining agents (nonpetroleum oils and fats) 320

Depitching agents 167

Chemicals that remove pitch from cellulosic materials.

Descaling agents 169

Chemicals that will remove scale from the surface of metals.

See also: Antiscaling agents 076

Desiccants 170

Substances that absorb water vapor from the air and abstract water from many fluids.

See also: Dehumidifiers 156, Dehydrating agents 157

Desizing agents 171

Chemicals used to remove sizing (e.g., starch, gelatin, casein, gums, waxes) from textiles, paper, or leather.

Detackifiers 172

A chemical that removes or reduces the adhesive properties of materials.

Detergent builders 173

A chemical that increases the detergent power of soap and synthetic surfactants.

See also: Soap Builders 345

Detergents 3620

Any substance that reduces the surface tension of water; specifically, a surfactant, which concentrates at oil-water interfaces, exerts emulsifying action, and, by this action, aids in removing soil.

Detonators

See: Blasting explosives 2060

Developers 174

Substances used to produce a visible image in exposed, radiation-sensitive materials.

Devulcanizing agents 175

Chemicals used to soften rubber during the reclaiming process.

See also: Rubber reclaiming agents 328

Dewaxing agents

See: Wax strippers 3582

Dielectrics

See: Electrical insulating compounds 2601, Semiconductors 338

Discharge printing agents 179

Substances capable of destroying a dye or mordant in a fabric to produce a colorless image upon colored backgrounds or vice versa.

Disinfectants 180

Substances used on inanimate objects that destroy or inhibit microorganisms but not bacterial spores.

See also: Antiseptics.

Disintegrating agents 181**Dispersants 3621**

Agents added to a suspending medium to promote uniform separation of extreme-

ly fine solid particles, often of colloidal size.

Dog and cat repellents

See: Animal repellents 021

Drainage aids

See: Flocculating agents 224

Drawing compounds 185

Materials to lubricate dies in the hot or cold forming of metals.

Driers 186

Chemicals that facilitate the drying of paints, varnishes, lacquers, inks, or sealants.

Drilling fluids

See: Drilling muds 188

Drilling mud conditioners 187

Any substance or substances added to drilling muds to increase the density, reduce viscosity, counteract contaminants, reduce filtrate loss, stabilize shale and clay, and to emulsify components of the mud.

Drilling muds 188

A suspension of finely divided materials pumped through the drill pipe during rotary well drilling to seal off porous zones, flush out chippings, and to lubricate and cool the bit.

Dry strength agents 189

Materials used to improve tensile and burst strength of paper products.

Drycleaning solvents

See: Solvents 352

Drying agents

See: Driers 186

Dulling agents

See: Delustrants 161

Dust control agents 190

Material or materials that are used to: (1) control the finely divided solid particles of powdered or ground material to reduce their discharge into the air, or (2) eliminate finely divided solid particles which have settled on surfaces.

Dust inhibitors

See: Dust control agents 190

Dust layers

See: Dust control agents 190

Dusting agents (rubber technology) 191

Materials that reduce the surface tack of rubber.

Dye assistants

See: Dye carriers 1100, Dye developers 1740, Dye intensifiers 2710, Dye leveling agents 2690, Dye reserving agents 192, Dye retardants 193, Dye retention aids 194, Fixatives 219, Mordants 278

Dye carriers 1100

Chemicals that increase dye penetration into textile products during processing.

Dye developers 1740

Chemicals added to dye solutions to form or develop dyestuffs directly on fiber.

Dye fixatives

See: Fixatives 219

Dye intensifiers 2610

Compounds used to increase the density of the tone or color in a dyed fabric.

Dye leveling agents 2690

Substances used to promote the even dyeing of textiles or paper.

Dye reserving agents 192

Materials that control the amount of dye absorbed by fibers, yarn, or fabric.

Dye retardants 193

Material added to a dye bath to prevent, by decreasing absorption of the dyes, the rapid exhaustion of the bath.

Dye retention aids 194

Materials added to a dye bath to ensure that the dye is retained on the fabric.

Dye strippers 3580

Substances used to remove dyes from fabrics so that they can be redyed.

Dyes 1330

Natural or synthetic chemicals used to impart a color to materials.

Electrical insulating compounds 2601

Materials that conduct electrical energy poorly, thus acting as a barrier to electrical conduction.

Electrolytes 195

Substances that, when fused or in solution, dissociate into ions and will then conduct an electric current.

Electroplating resists

See: Resists 323

Eluting agents 196

Substances used (1) to extract a solid substance from a mixture of solids, or (2) to remove adsorbed material from an adsorbent.

Emulsifiers 3622

Agents that hold in suspension a mixture of two or more immiscible liquids.

Emulsion breakers

See: Demulsifiers 163

Emulsion stabilizers 3540

Substances that assist in keeping finely divided droplets of an immiscible liquid suspended in another liquid.

Enamel opacifiers

See: Opacifiers 288

Engine coolants

See: Coolants 2441

Engraving agents

See: Etching agents 202

Entraining agents 199

Additives that form an azeotrope with one component of a liquid mixture to aid in otherwise difficult separations by distillation.

See also: Air entraining agents 1020

Enzymes 200

Catalytic proteins that are produced by living cells and that mediate and promote the chemical processes of life without themselves being altered or destroyed.

See also: Catalysts 112

Erosion control agents

See: Soil conditioners 349

Etching agents 202

Acidic or alkaline solutions used to solubilize and thus remove the surface layer of a material, usually metal or glass.

Evaporation control agents 203

Substances added to a liquid for reducing evaporation at the liquid surface.

See also: Surfactants 362

Explosion inhibitors 205

Substances used to reduce the explosion potential of flammable materials.

Explosives 206**Extenders 207**

Materials used to (1) dilute, augment, or change the properties of resins, ceramics, paints, rubber, etc., or (2) to reduce costs in paint, ink, plastic, and other formulations.

See also: Fillers (augmentation) 213

Extraction solvents

See: Solvents 352

Extreme pressure lubricants 2720

Materials that reduce friction between adjacent moving parts of a machine which are operating under high pressure.

Extrusion compounds

See: Plastic forming compounds 304

Feed supplements (livestock) 208**Fermentation nutrients**

See: Bacteriological nutrients 2830

Fertilizer conditioners 210

Substances which are added to fertilizer to inhibit caking by reducing its hygroscopicity.

Fertilizers 211

- Materials that are added to soil to supply chemical elements needed for plant nutrition.
- Fiber forming compounds 212
Manmade polymers that are capable of being spun or extended to make a fiber.
- Fillers (augmentation) 213
Inert materials added to substances to modify their properties and improve quality.
See also: Extenders 207, Reinforcing agents 321
- Fillers (patching) 214
Materials used to fill holes or indentations in wood, plaster, or other surfaces, usually before applying a coating such as paint or varnish.
- Film formers
See: Coatings 132
- Filter aids
See: Filtration aids 215
- Filtration aids 215
Materials used to prevent clogging of filters by removing colloidal particles that would otherwise not pass through the filter.
- Finishing agents (textile technology) 216
- Fire chemicals
See: Fire Extinguishing agents 217, Flame Retardants 220
- Fire extinguishing agents 217
Substances that, when applied to a fire, will put out or smother the fire.
- Fire retardants
See: Flame retardants 220
- Fireproofing agents
See: Flame retardants 220
- Fixatives 219
- Fixers
See: Fixatives 219
- Fixing agents
See: Fixatives 219
- Flame retardants 220
Substances added to or on materials to slow down the rate of flame propagation.
- Flameproofing agents
See: Flame retardants 220
- Flattening agents 221
Additives for paints or varnishes to disperse incident light rays to give the dried surface a matte finish.
- Flocculating agents 224
Substances that induce the aggregation of suspended solid particles in such a way that they form small clumps or tufts resembling wool.
See also: Clarifiers 127, Coagulants 130
- Flotation agents 2623
Chemicals that alter the surface tension of water or that make it froth easily; used in froth flotation to help separate particulate solids, especially minerals.
- Fluorescent brighteners
See: Optical brighteners 290
- Fluxes 227
- Foam forming compounds
See: Plastic Forming Compounds 304
- Foam inhibitors 228
Substances that, when added to liquids, suppress the formation of a foam or froth.
- Foam stabilizers 3541
Substances that prevent the breakdown of an extended gas-liquid interface composed of bubbles.
- Foaming agents
See: Blowing agents 102, Frothing agents 232
- Formation aids (paper technology) 230
Substances added to paper pulp stock to promote the uniform formation of paper on the Fourdrinier machine.
- Frothing agents 232
A substance that, when added to an agitated or aerated liquid, will promote the formation of a relatively stable foam or froth.
- Fuel additives
See: Antifreezes 049, Antiknock agents 056, Dehydrating agents 157, Detergents 3620, Fuel oxidizers 2950, Viscosity adjusters 380
- Fuel oxidizers 2950
Substances that provide oxygen necessary for combustion of fuel when normally oxygen is not present as, for example, the propulsion system of space vehicles.
- Fuels 233
Substances that evolve energy in a controlled reaction by combustion or nuclear fission.
- Fulling agents 234
Substances used to promote the compacting or shrinking of woolsens.
- Fume suppressants 235
- Fumigants
See: Pesticides 299
- Fungicides 236
Chemicals used to kill fungi.
- Fungistats 237
Agents used to inhibit the growth of fungi.
See also: Rotproofing agents 235
- Galvanizing fluxes 2271
Substances that remove oxides from and clean the surface of metals so that they may be more easily coated with zinc.
- Gas absorbers 0030
- Gas adsorbents 0120
- Gasoline
See: Fuels 233
- Gelling agents 239
Substances that cause the phase inversion of dispersed particles with formation of a porous semisolid containing residual liquid included in the voids.
- Germicides
See: Antibiotics 208, Antiseptics 079, Bactericides 096, Disinfectants 180
- Glass opacifiers
See: Opacifiers 288
- Granulating agents 240
- Grease removers
See: Degreasers 153
- Greaseproofing agents 241
Oil repellent substances applied to a surface to prevent penetration of the surface by oil or grease.
- Greases
See: Lubricants 272
- Grinding abrasives
See: Grinding, lapping, and polishing abrasives 0021
- Grinding, lapping, and polishing abrasives 0021
Various sized granular materials which may be (1) attached to substances such as cloth, plastics, wood, and iron; (2) bonded into a solid body to form a disc or wheel; or (3) applied in a loose, granular or powdered form to grind, clean, polish, or wear down metal, glass, wood, plastics, stone, or other substances.
- Grouts
See: Structural binders 359
- Hair bleaches
See: Bleaches 009
- Hardeners
See: Curing agents 142
- Heat insulating compounds 2602
Materials that conduct heat poorly thus acting as a barrier to heat conduction.
- Heat sealing agents 243
Thermoplastic materials capable of bonding surfaces together when heated and then cooled.
- See also:* Adhesives 009
- Heat stabilizers 3542
Substances that prevent the degradation of a material by heat.
- Heat transfer agents 244
- Heating fuels
See: Fuels 233
- Herbicides 248
- High explosives
See: Blasting explosives 2060
- High temperature lubricants 2721
Materials which reduce friction between adjacent moving parts of a machine which are operating at high temperatures
- Household cleaners
See: Cleaners 128
- Household disinfectants
See: Disinfectants 180
- Humectants 250
- Humidity indicators 251
Substances that change color with changes in the water vapor (humidity) of the surrounding atmosphere.
- Hydraulic fluids 252
Noncorrosive fluids of low viscosity which are used to transmit force.
- Hygroscopic agents
See: Dehumidifiers 156
- Incendiaries 256
Substances used in ammunition which are capable of igniting upon impact with a target.
- Indicators
See: Acid pickling indicators 005, Humidity indicators 251, Oxidation-reduction indicators 294, PH indicators 301
- Industrial cleaners
See: Cleaners 218
- Industrial disinfectants
See: Disinfectants 180
- Inflating agents (rubber technology) 257
Substances capable of generating inert gases upon heating and which may be added to rubber or plastic to produce a foamed or spongy texture.
See also: Blowing agents 102
- Inhibitors
See: Bloom inhibitors 101, Choline sterase inhibitors 125, Corrosion inhibitors 137, Foam inhibitors 228, Mold inhibitors 2371, Oxidation inhibitors 293, Ozonation inhibitors 291, Pickling inhibitors 303, Polymerization inhibitors 308, Pre Vulcanization inhibitors 311, Rust inhibitors 331
- Injection molding compounds
See: Plastic forming compounds 304
- Ink driers
See: Driers 186
- Ink fillers
See: Fillers (augmentation) 213
- Ink removers
See: Deinkers 144
- Inorganic intermediates 1210
Chemical intermediates that do not contain any carbon atoms.
- Insect attractants 258
- Insect repellents 259
Substances that drive away insects from the point of application.
- Insecticides 2991
- Institutional cleaners
See: Cleaners 128
- Institutional disinfectants
See: Disinfectants 180
- Instrument lubricants
See: Lubricants 272
- Insulating compounds 260
- Intensifiers 261
Compounds used in printing, photography, and textile dyeing to increase the density of the tone, color, or image.

- Intermediates**
See: Chemical Intermediates 121
- Internal combustion fuels**
See: Fuels 233
- Internal lubricants 2722**
 Agents that induce self-lubrication in plastics to assist flow in calendaring, molding or extrusion, impart lubricity to finished products, etc.
- Ion exchange compounds 262**
 Substances that have active ionic sites at which an exchange of mobile ions can occur while maintaining the electrical neutrality of the substance.
See also: Softeners 348
- Jet fuels**
See: Fuels 233
- Jointing compounds**
See: Caulking compounds 114
- Kier assistants (textile technology) 263**
 Substances that enhance the wetting of textiles and promotes the washing of the unfinished fabric.
- Kier boiling assistants**
See: Kier assistants (textile technology) 263
- Lachrymators 264**
 Substances that irritate the eyes causing tearing.
- Lacquers**
See: Coatings 132
- Lakes**
See: Dyes 1330
- Laminating agents 265**
 Substances that are used to bond or cement two or more layers of the same or different materials to form a composite.
- Lapping abrasives**
See: Grinding, lapping, and polishing abrasives 0021
- Laundering agents**
See: Bleaches 099, Detergents 3620, Laundry soaps 266, Rinse aids 3625, Wetting agents 3626
- Laundry bleaches**
See: Bleaches 099
- Laundry soaps 266**
 Substances such as acids or acid salts that neutralize residual alkalinity in laundering.
- Leather softeners**
See: Softeners 348
- Leather stains**
See: Stains 355
- Leveling agents 269**
- Liquid absorbents 0031**
 Materials that assimilate liquids frequently for the purposes of separation or purification.
- Liquid adsorbents 0121**
- Liquid propellants**
See: Fuels 233
- Loading agents**
See: Weighting agents 284
- Lubricant additives 271**
 Substances added to lubricants to improve their properties, such as thermal resistance, viscosity, or detergency.
- Lubricants 272**
 Materials that reduce the friction developed between adjacent solid surfaces, at least one of which is in motion such as the moving parts of a machine or piece of equipment.
See also: Oiliness agents 287
- Machinery lubricants**
See: Lubricants 272
- Masking agents (odors) 1660**
 Substances that counteract an undesirable odor by introducing a stronger, more pleasant odor.
See also: Odorants 285
- Markers (textile) 273**
 Laundry and drycleaning-resistant substances used to label textiles.
- Mercerizing agents 275**
 Substances that promote the alkaline treatment of certain textile fibers causing them to be stronger and more receptive to dyes.
- Mercury decontaminants 1490**
 A chemical or metal which will remove mercury and its compounds from water or chemicals.
- Metal conditioners 276**
 Substances used to prepare metal surfaces for coating, electroplating, or passivating a chemically active metal surface.
- Metal etching agents**
See: Etching agents 202
- Metal pickling agents**
See: Pickling agents 302
- Microbiological culture media 277**
 Materials that contain all the nutrients necessary to grow a particular microorganism.
See also: Bacteriological nutrients 2830
- Mildew preventatives 2370**
 Chemicals used to prevent the growth of fungi responsible for mildew formation.
- Milling agents**
See: Pulling agents 234
- Miscellaneous**
See: Other 291
- Mold binders**
See: Binders -098
- Mold inhibitors 2371**
 Chemical substances capable of slowing down or preventing the growth of mold.
- Mold lubricants**
See: Lubricants 272
- Mold release agents**
See: Lubricants 272
- Molding compounds**
See: Plastic forming compounds 304
- Monomer**
See: Polymerization intermediates 1212
- Mordants 278**
 Substances capable of fixing or binding a dye in or on a substance (for example, a textile fiber) by combining with the dye to form an insoluble compound.
- Mothproofing agents 2590**
 Substances that repel moths that breed in wool and fur.
- Motor lubricants**
See: Lubricants 272
- Neutralizing agents**
See: PH control agents 300
- Nuclear fuels**
See: Fuels 233
- Nucleating agents 282**
 Agents that promote materials such as liquids, supersaturated solutions, and saturated vapors to form crystals or droplets.
- Nutrient supplements**
See: Dietary supplements 177
- Nutrients 283**
See: Dietary supplements 177
- Obscuring agents 284**
 Substances, that upon dispersal, form a smoke screen and restrict visibility.
- Odor control agents**
See: Deodorants 166
- Odor masking agents**
See: Masking agents (odors) 1660
- Odorants 285**
 Substances used to impart an odor to odorless gases, for example, or to mask unpleasant odors with one that is more pleasant.
See also: Masking agents (odors) 1660
- Oil repellents 286**
 Substances that are applied to papers and textiles to prevent oil staining.
- Oil resistant agents**
See: Oil repellents 286
- Oiliness agents 287**
 Agents that retard the gumming of vegetable oils while promoting lubrication.
See also: Lubricants 272
- Opacifiers 288**
 Materials used in products to make them, or some part of them, nontransparent; they may also enhance luster, control texture, stabilize color, or promote craze resistance.
- Optical bleaches**
See: Optical Brighteners 290
- Optical brighteners 290**
 Colorless, fluorescent organic compounds which absorb ultraviolet light and emit it as visible blue light to mask undesirable yellow tones in textiles, paper, detergents, and plastics.
See also: Bleaches 099, Brighteners (electroplating) 106
- Organic intermediates 1211**
 Chemical intermediates that contain carbon atoms.
- Organic synthesis catalysts**
See: Catalysts 112
- Oxidants**
See: Oxidizers 295
- Oxidation inhibitors 293**
 Substances which, when compounded with various materials, retards the rate of oxidation.
See also: Ozonation inhibitors 296
- Oxidation-reduction indicators 294**
 Substances that undergo a reversible color change upon exposure to oxidation or reduction reaction conditions.
- Oxidizers 295**
 Compounds that give up oxygen easily, remove hydrogen from other compounds, or attract electrons.
- Oxidizing agents**
See: Oxidizers 295
- Ozonation inhibitors 296**
 Substances that protect materials from degradation by reaction with ambient ozone.
See also: Oxidation inhibitors 293
- Paint binders**
See: Binders 098
- Paint driers**
See: Driers 186
- Paint fillers**
See: Fillers (augmentation) 213
- Paint removers**
See: Paint strippers 3581
- Paint strippers 3581**
 Substances used to remove paints from surfaces.
- Paint thinners**
See: Solvents 352
- Paint vehicles**
See: Binders 098
- Paints**
See: Coatings 132
- Paper fillers**
See: Fillers (augmentation) 213
- Paper opacifiers**
See: Opacifiers 288
- Parasitocides**
See: Antiparasitics 066
- Patching compounds**
See: Fillers (patching) 214
- Pearlizing agents 298**
 Substances that impart a shiny, opalescent appearance to materials such as plastics and paints.
- Pelletizing Binders**
See: Binders 098
- Penetrants 3624**
 Any compound used to increase the speed and ease with which a bath or liquid

- permeates a material being processed by effectively reducing the interfacial tension between the solid and liquid.
- Penetrating agents**
See: Penetrants 3624
- Peptizing agents** 1950
Materials that (1) promote colloid dispersion and stabilize hydrophobic colloid solutions by providing ions which are adsorbed on the particle surfaces, and (2) that, in trace quantities, will soften or liquify another substance.
- Perfume fixatives**
See: Fixatives 219
- Petroleum Refining Catalysts**
See: Catalysts 112
- PH control agents** 300
Substances added to change or actively maintain acidity or basicity, including buffers, acids, alkalies, and neutralizing agents.
- PH indicators** 301
Substances that measure the approximate degree of acidity or basicity of solutions.
- Pickling agents** 302
Substances used to remove rust and scale from metal surfaces.
- Pickling indicators**
See: Acid pickling indicators 005
- Pickling inhibitors** 303
Substances added to materials used as acid pickling agents which retard or prevent the chemical action of the acid on the base metal.
- Pigments** 1331
Materials, usually insoluble dry powders, that are used to impart color to substances or mixtures by selectively absorbing and reflecting light.
- Plasma extenders** 2070
- Plastic forming compounds** 304
Compositions, including a polymer as a major constituent, that are capable of being shaped by a molding process, such as injection, compression, extrusion.
- Plasticizers** 305
An additive that imparts flexibility and softness to an otherwise rigid plastic.
- Plastic compounding agents** 306
- Plastics fillers**
See: Fillers (augmentation) 213
- Plastics reinforcing agents**
See: Reinforcing agents 321
- Plastisols**
See: Coatings 132
- Poison gas decontaminants** 1491
Chemicals that will remove poison gases from surfaces.
- Polishes**
See: Coatings 132
- Polishing Abrasives**
See: Grinding, lapping, and polishing abrasives 0021
- Pollution control catalysts**
See: Catalysts 112
- Polymerization additives** 307
- Polymerization catalysts**
See: Catalysts 112
- Polymerization inhibitors** 308
Substances that, when added to a reaction mixture of monomeric chemicals, stop or retard the action of polymerization.
See also: Chain stoppers (polymerization) 119
- Polymerization intermediates** 1212
Polymeric substances that are formed in the sequence of chemical reactions between starting materials and a product.
- Powder coatings**
See: Coatings 132
- Precision instrument lubricants**
See: Lubricants 272
- Prespotting agents (drycleaning)** 309
- Substances used prior to drycleaning or textiles to loosen or dissolve soil.
- Preservatives** 310
(1) Substances added to chemicals, natural products, fabrics, or food products to preserve them against decay, discoloration, or spoilage. (2) Substances impregnated into or covering wood to prevent attack by insects and other organisms.
- Pressure molding compounds**
See: Plastic forming compounds 304
- Prevulcanization inhibitors** 311
Substances which prevent scorch and premature vulcanization of rubber prior to reaching vulcanization temperatures.
- Printing and dyeing resists**
See: Resists 323
- Printing ink driers**
See: Driers 186
- Printing ink fillers**
See: Fillers (augmentation) 213
- Propellant explosives** 2061
Combustible substances that produce heat and supply ejection particles, as used in nonnuclear ammunition; for propellant explosives used as fuels.
- Propellants**
See: Aerosol propellants 014, Fuels 233, Propellant explosives 2061
- Protective agents** 312
Agents used to protect wool and silk during wet processing.
- Pulping retention aids** 315
Substances added to the pulp slurry to maximize drainage and minimize loss of pulp fibers in the initial stage of the paper forming process.
- Quenching agents**
See: Coolants 2441
- Radiation protective agents** 316
Substances affording protection against the deleterious effects of radioactivity.
- Radiation sensitizing agents** 317
- Radioactivity decontaminants** 1492
Any chemicals that will remove radioactivity from surfaces, coolants, or carrier gases or from the air.
- Rayon soaking oils**
See: Soaking agents (textile technology) 344
- Reaction media** 318
Substances that act as vehicles for chemical reactions and which do not enter into the reaction themselves.
- Reaction solvents**
See: Reaction media 318, Solvents 352
- Reducers (chemical technology)** 319
Substances that act as electron donors in a chemical reaction.
- Reducing agents**
See: Reducers (chemical technology) 319
- Refining agents** 320
Substances used to remove impurities from crude oils before further treatment.
See also: Deodorants 166
- Refining catalysts**
See: Catalysts 112
- Refrigerants** 2442
Substances that, by undergoing a change in phase (liquid to gas, gas to liquid), release or absorb a large latent heat in relation to their volume and thus cause a considerable cooling effect.
- Reinforcing agents** 321
Substances used to increase the strength, hardness, abrasion resistance, and tear resistance of materials such as rubber, plastics, and flooring compositions.
See also: Fillers (augmentation) 213
- Relaxants**
See: Muscle relaxants 280
- Release Agents**
See: Lubricants 272
- Removers**
See: Deinkers 144, Degreasers 153, Descaling agents 169, Dye strippers 3580, Paint strippers 3581, Prespotting agents (drycleaning) 309, Rust removers 332, Strippers 358, Tar removers 366, Tarnish removers 367
- Reodorants**
See: Odorants 285
- Repellents**
See: Animal repellents 021, Insect repellents 259, Oil repellents 286, Water repellents 382
- Repulping aids** 322
Substances that facilitate wetting of dried paper pulp to form a water suspension of the paper fibers.
- Resin curing agents**
See: Curing agents 142
- Resists** 323
Substances applied as a protective layer to selected areas of a surface to prevent printing, dyeing, or etching of those areas of the surface.
See also: Coatings 132
- Retardants**
See: Dye retardants 193, Flame retardants 220, Soil retardants 351
- Retention Aids**
See: Dye retention aids 194, Pulping retention aids 315
- Rewetting Aids**
See: Wetting agents 3627
- Rinse aids** 3625
Any chemicals which are added to a wash bath to remove traces of materials such as soap, contaminants, and residues.
- Rocket fuels**
See: Fuels 233
- Rotproofing agents** 325
Substances added to textiles, wood products, etc. to prevent their degradation by microorganisms.
See also: Fungistats 237
- Rubber antioxidants**
See: Oxidation inhibitors 293
- Rubber blowing agents**
See: Blowing agents 102
- Rubber compounding agents** 326
- Rubber curing agents**
See: Curing agents 142
- Rubber fillers**
See: Fillers (augmentation) 213
- Rubber forming compounds** 327
Compositions including an elastomer as a major constituent that are capable of being shaped by a forming process.
- Rubber reclaiming agents** 328
Substances used to help prepare scrap rubber for reuse.
See also: Devulcanizing agents 175
- Rubber reinforcing agents**
See: Reinforcing agents 321
- Rubber softeners**
See: Softeners 348
- Rubber tackifiers**
See: Tackifiers 364
- Rubbing fastness agents (textile technology)** 329
Substances added to textiles to improve their resistance to abrasion.
- Rust inhibitors** 331
Substances used to prevent the formation of iron oxides on ferrous metals and alloys.
- Rust preventatives**
See: Rust inhibitors 331
- Rust removers** 332
Substances used to remove oxidized iron (rust) from the surface of metals.
- Sanitizers**

See: Disinfectants 180**Scavengers 333**

Substances added to a process or mixture to consume or inactivate by-products, traces of impurities, etc. In metallurgy; a reactive metal added to a molten metal to combine with and remove dissolved gases.

Scouring agents 335

Compounds used to remove the natural oils and fats from raw wool; to remove lubricants applied to rayon yarns or fabrics during such operations as throwing, winding, weaving, and knitting; also used to clean process equipment surfaces.

See also: Abrasives 002

Scrooping agents 336

Substances that impart a stiff or harsh feel to silk.

Scum breakers

See: Demulsifiers 163

Sealants 337

Organic compounds that are soft enough to pour or extrude and, upon subsequent hardening, form a permanent bond with the substrate.

See also: Adhesives 009, Caulking compounds 114

Seed disinfectants

See: Disinfectants 180

Semiconductors 338

Solid crystalline materials whose electrical conductivity is intermediate between that of a metal conductor and that of an insulator.

Sequestrants 339

Substances that remove a metal ion from a solution system by forming a complex ion that does not have the chemical reactivity of the metal ion that is being removed; sequestrants can be chelating or complexing agents.

Shellacs

See: Coatings 132

Shrinkage controllers 340

Materials added to textiles to reduce contraction resulting from washing or laundering.

Sizes 341

Substances applied to fabric or yarn to increase its stiffness, strength, smoothness, or weight.

See also: Stiffening agents 357

Slime preventatives 342**Slimicides**

See: Slime preventatives 342

Slip-proofing agents

See: Antislip finishing agents 084

Soaking agents 344

Substances that facilitate the wetting of textiles.

Soap builders 345

Substances mixed with soap to modify its alkali content, to add water softening ability, or to otherwise improve cleaning properties.

See also: Detergent builders 173

Soaping agents (printing and dyeing) 346

Substances used to prepare textiles for printing or dyeing.

Soaping-off assistants 347

Substances used to facilitate the removal of unattached dye, dye assistants, or soaking agents after dyeing.

Soaps

See: Detergents 3620

Softeners 348

(1) Compounds used in textile finishing to impart superior "hand" to the fabric and facilitate mechanical processing. (2) Substances that reduce the hardness of water by removing or sequestering calcium and magnesium ions.

Soil conditioners 349

(1) Materials added to topsoil to reduce acidity (e.g., lime), to promote growth (e.g., bone meal), or to improve the tilth of the soil. (2) Long-chain organic molecules which affect the anion exchange capacity of soil.

Soil disinfectants

See: Disinfectants 180

Soil release agents 350

Substances capable of promoting the removal of dirt from textiles.

Soil retardants 351

Substances applied to textiles to inhibit the attachment of dirt to the fabric and to facilitate removal of attached dirt in cleaning operations.

See also: Antistaining agents 086

Soil repellents

See: Soil retardants 351

Soil suspending agents 3626

Compounds used in laundry and drycleaning products to prevent redeposition of soil in laundry.

Soil wetting agents

See: Wetting agents 3627

Soldering fluxes 2272

Substances that remove oxides from and clean the surface of metals so that they may be joined more easily by fused solder (lead-tin alloy).

Solid material adsorbents 0122**Solid propellants**

See: Fuels 233, Propellant explosives 2061

Solvents 352

Substances capable of dissolving another substance (solute) to form a uniformly dispersed mixture (solution) at the molecular or ionic level.

See also: Strippers 358, Tar removers 366

Solvents (chemical process)

See: Reaction media 318

Sound insulating compounds

See: Acoustical insulating compounds 2600

Spotters

See: Prespotting agents (drycleaning) 309

Spotting agents

See: Prespotting agents (drycleaning) 309

Spreading agents 353

Substances used to promote the uniform coating and adhesion of agricultural chemicals (except fertilizers) onto plant surfaces.

Stabilizers 354**Stain removers**

See: Bleaches 099, Cleaners 128, Degreasers 153, Prespotting agents (drycleaning) 309, Solvents 352

Stains 355

(1) Non-protective coloring matter used on wood or leather surfaces to impart color without obscuring the grain. (2) Any colored, organic compound used to impart color to tissues, cells, or cell components for microscopic examination.

Starch improvers 356

Substances that improve the effectiveness of starch as a fabric finish.

Starches

See: Stiffening agents 357

Sterilizing agents

See: Antiseptics 079, Bactericides 096, Disinfectants 180

Stiffening agents 357

Substances used to strengthen or harden rubber or fabric.

See also: Sizes 341

Stopoffs

See: Resists 323

Strippers 358

Substances used to remove dyes, coatings, paints, waxes, etc. from surfaces of materials.

See also: Solvents 352

Structural binders 359

Substances used to cement structural elements together.

Structural components 360

Materials used as structural elements.

Sun-checking agents

See: Ultraviolet absorbers 0032

Surface active agents

See: Surfactants 362

Surface finishing agents 361

See: Coatings 132

Surfactants 362

See: Evaporation control agents 203

Suspending agents

See: Dispersants 3621, Emulsifiers 3622, Soil suspending agents 3626

Swelling agents 363

Solvent-like materials that are added to the reclaimed rubber to make it easier to process.

Tackifiers 364

Any material applied to a surface or added to a compound to improve adhesion.

Tanning agents 365

Any of the tannings used to treat hides and skins to protect them from decay.

Tanning bases

See: Bates 3650

Tar removers 366

Chemicals that are used to remove tar from a material.

See also: Solvents 352

Tarnish removers 367

Substances that will remove the discoloration of a metal surface due to the formation of a thin film of oxide, sulfide, etc.

Textile conditioners 368

Substances used in any of the processing steps of natural and synthetic fibers, yarns, and fabrics as aids in manufacturing, bleaching, dyeing, and finishing operations.

Textile lubricants

See: Lubricants 272

Textile softeners

See: Softeners 348

Texturizers 369**Thermal insulating compounds**

See: Heat insulating compounds 2602

Thickeners 370

Any material or combination of materials that will (1) form a solid or semi-solid dispersion of a fluid lubricant; (2) improve or increase the stiffness, strength, smoothness, or weight of yarns, fabric, leather, paper, or other products; and (3) increase the viscosity of paints, coatings, etc.

Thinners

See: Solvents 352

Thinning solvents

See: Solvents 352

Thixotropic agents 3800

Agents that form a colloidal system capable of reversible gel-sol transformation used, for example, to prevent running of paints.

Tinning fluxes 2273

Materials used to remove oxides from, and clean, the surface of metals so that they may be more easily coated with tin.

Toners 372

(1) Coloring agents in which all pigments and the vehicle are organic. (2) Substances used to convert a colorless image to a colored image or an electrostatic image to a visible image.

Transmission fluids

See: Automatic transmission fluids 2520
 Ultraviolet absorbers 0032
 Materials used to protect against the accelerating effects of ultraviolet energy on the physical and chemical deterioration of plastics, colorants, and other substances by absorbing and harmlessly dissipating the energy.
 See also: Anticracking agents 034
 Varnish driers
 See: Driers 186
 Varnishes
 See: Coatings 132
 Vat printing assistants 379
 A mixture of gums, reducing and wetting agents used to carry the dye in printing fabrics with vat dyes.
 Vesicants 1687
 Viscosity adjusters 380
 Substances that will modify flow characteristics of other substances or mixtures when added to them.
 Viscosity depressants 3801
 Substances that reduce the effect of temperature on the viscosity of a liquid.
 Viscosity improvers 3802
 An additive for lubricating and automotive oils that lowers the pour point.
 Viscosity regulatory
 See: Viscosity adjusters 380
 Vulcanization catalysts
 See: Catalysts 112
 Vulcanization leveling agents 2691
 Substances used to promote the even vulcanization of rubber.
 Vulcanizing agents 381
 Substances used in the vulcanization of rubber to convert rubber hydrocarbon from a soft, tacky thermoplastic to a strong, temperature-stable thermoset having unique elastic modulus and yield properties.
 Water repellents 382
 Chemicals used to treat textiles, leather, paper, or wood to make them resistant (but not proof) to wetting by water.
 See also: Waterproofing agents 383
 Water softeners
 See: Chelating Agents 3390, Ion Exchange Compounds 262, Softeners 348
 Waterproofing agents 383
 Chemical used to make materials impervious to penetration by water.
 See also: Water repellents 382
 Waxes
 See: Coatings 132
 Wax strippers 3582
 Substances used to remove wax from surfaces.
 Weed killers
 See: Herbicides 248
 Weighting agents 384
 Substances that are added to yarn or fabric to increase their weight or to act as a filling agent to cloth.
 Welding fluxes 2274
 Substances which remove oxides from, and clean the surface of metals so that they may be more easily joined by high temperature fusion processes.
 Wet strength agents 385
 Chemicals used to increase the bursting strength of wet paper and wet paper-board products.
 Wetting agents 3627
 Surfactants that, when added to water, cause it to penetrate more easily into, or to spread over the surface of another material by reducing the surface tension of water.
 Whitening agents
 See: Optical brighteners 290
 Whitening finishes (fluorescent)

See: Optical brighteners 290
 Wood stains
 See: Stains 355

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order

01 Agriculture, forestry and fishing (the production of crops, livestock, and animal specialties includes both operations directly involving production (e.g., soil fertilization, livestock feeding) and indirect operations involving the physical plant (e.g., grain storage, barn disinfecting))
 010 Animal services
 0100 Animal services, except veterinary
 01000 Artificial insemination and breeding
 01001 Cattle spraying
 01002 Grooming and boarding (includes dogs, cats, and horses)
 01003 Milk testing
 01004 Sheep dipping and shearing
 0101 Veterinary services
 011 Animal specialty production
 0110 Earthworm production
 0111 Fur-bearing animal production (includes chinchillas, minks, foxes, rabbits, and fur-bearing game)
 0112 Honey and bee production
 0113 Horse and other equine production
 0114 Pet production
 0115 Silk and silkworm production
 012* Crop production
 0120 Cash grain production
 01200 Corn production
 01201 Rice production
 01202 Soybean production
 01203 Wheat production
 0121 Field crop production, except cash grains
 01210 Cotton production
 01211 Potato production
 01212 Sugar production
 01213 Tobacco production
 0122 Fruit and tree nut production
 01220 Berry production
 01221 Citrus fruit production
 01222 Deciduous tree fruit production
 01223 Grape production
 01224 Tree nut production
 0123* Horticultural specialties production
 01230 Food crops grown under cover
 01231 Home lawn and garden horticulture
 01232 Ornamental floriculture and nursery products
 0124 Vegetable and melon production
 013 Fishing, hunting, trapping (commercial only)
 0130 Fish hatcheries, preserves, and shellfish beds
 0131 Fishing (includes fishing for finfish and shellfish)
 0132 Hunting, trapping, and game propagation
 014* Forestry
 0140 Forest nurseries
 0141 Forestry services
 01410* Firefighting and prevention (forest)
 01411 Reforestation
 0142 Tree seed gathering, extracting, and selling
 015 Livestock production and dairy farming
 0150 Dairy farming
 0151 Livestock production, except dairy and poultry stock
 01510 Beef cattle production
 01511 Hog production
 01512 Sheep and goat production
 0152 Poultry and egg production
 01520 Chicken egg production
 01521 Chicken production
 01522 Poultry specialty and egg production (includes ducks, geese, pheasants, pigeons, and quail)
 01523 Turkey and turkey egg production
 02* Chemicals
 020* Industrial inorganic chemicals
 021* Industrial organic chemicals (does not include plastic materials and synthetics)
 0210 Acyclic chemicals
 0211* Cyclic chemicals
 0212* Reagent and high purity grade chemicals

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

03* Construction
 030* Building construction
 0300 Industrial buildings and warehouses
 0301 Nonresidential buildings, except industrial (includes amusement and recreational facilities, commercial buildings, farm buildings)
 0302 Residential buildings (includes dormitories and hotels)
 031* Construction, except building construction
 0310 Bridges, tunnels, and elevated highways
 0311* Highways and streets
 0312 Miscellaneous nonbuilding construction
 03120 Blasting, except demolition
 0313 Public utility equipment (includes water, sewer, pipelines, communication, and powerlines)
 032 Construction specialties
 0320* Carpentry and flooring
 03200* Carpentry
 03201 Floor laying, scraping, and finishing
 0321* Concrete work
 0322 Electrical work
 0323* Masonry, stonework, tile setting, and plastering
 03230 Masonry and stonework
 03231 Plastering, drywall, acoustical, and installation work
 03232 Terrazzo, tile, marble, and mosaic work
 0324 Miscellaneous special construction work
 03240 Glass and glazing work
 03241 Structural steel erection
 0325* Painting, paperhanging and decorating
 0326* Plumbing, heating and air-conditioning work
 0327 Roofing and sheet metal work
 0328 Water well drilling and servicing
 04 Consumer and commercial applications
 040 Building and general applications
 0400* Cleaning and maintenance
 04000 Chimney and furnace cleaning
 04001* Dwelling cleaning and maintenance
 04002* Hospital cleaning and maintenance
 04003* Office and public building cleaning and maintenance
 04004* Service station cleaning and maintenance
 04005* Swimming pool cleaning and maintenance
 0401* Commercial testing (excludes testing laboratories associated with manufacturing plants)
 04010 Automobile testing
 04011* Chemical and medical testing
 04012 Food testing
 04013 Product testing
 04014* Radiation detection and dosimetry
 04015 Seal testing
 0402* Disinfecting and exterminating (excludes use of disinfectants and pesticides for agricultural or horticultural purposes)
 04020 Bird proofing
 04021 Disinfecting
 04022 Insect and rodent exterminating
 0403* Electric and gas supply
 04030* Electric power generation, transmission, and distribution
 04031* Gas transmission and distribution (excludes natural gas, mixed gas, manufactured gas, and liquefied petroleum gas)
 0404* Firefighting and prevention (building and general)
 0405* Law enforcement
 0406* Research and development (excludes research and development laboratories of companies which manufacture the products resulting from research and development activities)
 0407* Sewerage treatment and refuse disposal
 0408* Water supply
 04080* Water purification
 04081* Water softening
 041* Personal applications
 0410 Beauty and barber shop services
 0411 Burial services (includes crematories and funeral homes)
 0412* Laundry and drycleaning
 04120* Drycleaning and dyeing
 04121 Fur cleaning and storage

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

04122*	Laundering (includes industrial laundry and linen supply services, diaper services, coin operated laundry services, and home laundering)
04123*	Rug and upholstery cleaning
0413*	Lodging (includes hotels, motels, camps, and trailer parks)
042*	Repair work
0420*	Electrical repair work (includes the repair of electrical and electronic equipment, such as televisions, radios, phonographs, tape recorders, and household appliances; does not include the installation, repair or maintenance of radio and television broadcasting equipment or of other industrial equipment such as computers, diathermy, X-ray, heat-treating or welding equipment)
0421*	Furniture repair and refinishing work
0422*	Replating work
0423	Shoe and leather repair work
0424	Watch, clock and jewelry repair work
0425	Welding repair work
06*	Fabricated metal products
060	Cutlery, hand tools, and hardware
0600	Cutlery
0601	Hand and edge tools
0602	Handsaws and saw blades
0603	Hardware
0604	Vacuum and insulated containers
061*	Fabricated structural metal products
0610	Architectural metal work
0611	Fabricated plate work
0612	Fabricated structural metal
0613	Metal doors, sash and trim
0614	Prefabricated metal buildings
0615	Sheet metalwork
062*	Metal cans and shipping containers
0620	Metal barrels, drums, and pails
0621	Metal cans
063*	Metal forgings and stampings
0630	Automotive stampings
0631	Crowns and closures
0632	Iron and steel forgings
0633	Job stampings (includes aviation, agricultural equipment, electrical appliance, office machine, furniture, radio, and television stampings)
0634	Nonferrous forgings
0635	Stamped and spun utensils
064*	Metal processing operations
0640*	Brazing, welding and soldering
0641*	Coating (includes painting, lacquering, enameling, varnishing, japanning, plating, anodizing, galvanizing, and application of rust inhibiting coatings)
0642*	Engraving and etching, except for printing
0643*	Machining
0644	Polishing
0645*	Surface cleaning and conditioning (includes descaling and tarnish and rust removal)
065	Miscellaneous fabricated metal products
0650	Fabricated pipe and fittings (metal)
0651	Metal foil and leaf
0652	Steel springs, except wire
0653	Valves and pipe fittings (metal)
0654	Wire springs
066	Plumbing equipment (metal)
0660	Metal plumbing fixtures
0661	Plumbing fixture fittings and trim (metal)
067	Screw machine products and fasteners
0670	Metal fasteners (includes nuts, bolts, rivets, and washers)
0671	Screw machine products
07*	Fabricated rubber and plastic products
070*	Miscellaneous fabricated plastic products
0700*	Foamed plastic products (includes uncovered mattress core, insulation, and formed and slab stock for pillows and cushions, cups, and plates, etc.)

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

0701*	Industrial plastic products (includes parts and accessories for motor vehicles, aircraft, missiles, appliances, and industrial equipment, as well as knife handles, battery boxes, plugs, etc., excludes belting, packing, and seals)
0702*	Laminated plastic sheet, rod, and tube
0703	Phonograph records and recording tapes
0704	Plastic apparel
0705	Plastic dinnerware, tableware, and kitchenware
0706*	Plastic packaging and shipping containers (includes boxes, bottles, drums, closures, blister and bubble formed packaging and box liners; for plastic packing dunnages, see foamed plastic products or unsupported plastic film, sheet rod, and tube.)
0707	Plastic tubing, except medical and surgical
0708	Regenerated cellulosic products, except rayon (includes cellophane, caps, bands, and sponges)
0709*	Unsupported plastic film, sheet, rod, and tube
071*	Miscellaneous fabricated rubber products
0710	Mechanical rubber goods (includes hard, molded, extrusion and lathe cut rubber mechanical goods, rubber boats and rafts, pressure sensitive tape, sheet rubber rolls and tubing, except medical and surgical)
0711	Rubber apparel (includes bathing and shower caps, rainwear, aprons, baby pants, industrial rubber gloves)
0712	Rubber balloons (includes toy, advertising, and meteorological balloons)
0713	Rubber coated fabrics (includes apparel and footwear fabrics, upholstery fabrics, and hospital and crib sheeting)
0714	Rubber drugist and medical sundries (includes household and surgical gloves, bottles and nipples, prophylactics, ice bags, medical-surgical tubing)
0715	Rubber floor and wall coverings
0716	Rubber heels and soles (includes mats, stair treads)
0717	Rubber stationers' sundries (includes rubber bands, erasers, and finger cots)
0718*	Sponge and foam rubber goods (includes latex foam and chemically blown sponge for padding, upholstery, mattress cores, pillows, and insulation)
0719	Unsupported rubber film and sheeting
072*	Reclaimed rubber (any vulcanizable material, except reclaimed residue, derived from processing or treatment of natural or synthetic vulcanized scrap rubber, such material is used as a raw material in the manufacture of rubber goods with or without admixture with crude or synthetic rubber)
073*	Rubber and plastic footwear (includes protective footwear, shoes, and beach and shower slippers)
074*	Rubber and plastic hose and belting
075*	Tires and inner tubes (includes pneumatic and solid tires, inner tubes, tread rubber, tire sundries, and repair materials)
08*	Fabricated textile products
080*	Apparel (excludes plastic and rubber apparel)
0800	Hats and caps
0801	Miscellaneous apparel and accessories (includes cloth gloves, robes, waterproof outerwear, except rubberized, cloth belts, handkerchiefs, and religious and academic gowns and vestments)
0802	Outerwear, except knitted
0803	Underwear, except knitted
081	Automotive, furniture, and apparel trimmings
082	Canvas and related products
0820	Awnings
0821	Sails
0822	Tarpaulins

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

0823	Tents and air-supported structures
083	Pleating and stitching (includes embroidery, stamped art goods, and art needlework)
084	Textile bags (includes cotton, synthetic, spun paper, and burlap bags)
085	Textile home furnishings (includes bed, bath and table linens, draperies, slip covers, mops, and dusters)
10*	Furniture and fixtures
100	Household furniture (includes indoor and outdoor furniture)
1000	Mattresses and bedsprings
1001	Metal household furniture
1002	Plastic household furniture
1003	Upholstered wood household furniture
1004	Wood appliance cabinets
1005	Wood household furniture
101	Miscellaneous furniture (includes drapery hardware, blinds and shades, hospital beds)
102	Office and store furniture
1020	Metal office furniture
1021	Plastic office furniture
1022	Upholstered wood office furniture
1023	Wood office furniture
103	Partitions and fixtures
1030	Metal partitions and fixtures
1031	Plastic partitions and fixtures
1032	Wood partitions and fixtures (includes plastic-laminated wood fixture tops)
104	Public building furniture and related furniture (includes furniture for schools, theaters, restaurants, religious buildings, and libraries, as well as seats for public conveyances and automobiles)
11	Instruments and related products
110*	Engineering and scientific instruments
111	Measuring and controlling devices
112	Medical and dental instruments and supplies
113*	Ophthalmic goods
1130	Contact lenses
1131	Eyeglasses (includes frame and lenses)
11310	Corrective glasses
11311	Fashion tinted glasses
11312	Sunglasses
1132	Industrial goggles and protective glasses
114*	Optical instruments and lenses
115	Photographic equipment and supplies
1150	Cameras, projectors, processors, screens, photocopying equipment, etc.
1151*	Silver halide photographic films, papers, and plates
1152*	Nonsilver halide photographic films, papers, and plates, including electrophotography
1153*	Photographic processing
12*	Leather and fur
120*	Leather and fur finishing (includes dyeing, polishing, softening, etc.)
121*	Leather and fur products
1210	Leather and fur accessories
1211	Leather and fur apparel
1212	Leather footwear
1213	Leather gloves (includes handbags, wallets, key, and glass cases, change purses, and other leather cases)
1214	Leather luggage
1215	Saddlery
1216	Upholstery leather
122*	Leather and fur tanning
13*	Lumber and wood products (excludes furniture)
130	Cork
131	Fabricated hardboard products
132*	Millwork, plywood, and structural members
133*	Mirror and picture frames
134	Particleboard
135*	Prefabricated wood buildings (includes mobile homes and buildings and prefabricated homes, farm buildings, marinas, sauna rooms, and paneling)
136	Preserved wood
137	Sawmill and planing mill products
138*	Wood containers

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

- 14* Machinery and equipment (covers the use of chemicals in the construction, operation and maintenance of machinery and equipment, includes mechanical, electrical, and electronic machinery and equipment)
- 140 Communication and recording equipment
- 1400 Radio and television communication equipment (includes commercial, industrial, and military communication equipment, navigational and detection equipment, and satellite communications systems)
- 1401 Radio, television, and recording equipment
- 1402 Telephone and telegraph apparatus
- 141 Electric lighting and wiring equipment
- 1410 Current-carrying wiring devices (includes lightning rods)
- 1411 Electric lamps
- 14110 Fluorescent lamps
- 14111 Incandescent lamps
- 1412 Lighting fixtures
- 1413 Vehicular lighting equipment
- 142* Electric transmission and distribution equipment
- 1420 Switchgear and switchboard apparatus
- 1421 Transformers (electric) (includes fluorescent lamp ballasts and power regulators, boosters, and reactors)
- 143* Electronic components and accessories
- 1430 Cathode ray television picture tubes
- 1431 Electronic capacitors
- 1432 Electronic coils, transformers, and inductors
- 1433 Electronic connectors
- 1434 Electronic resistors
- 1435 Receiving-type electron tubes, except cathode ray
- 1436* Semiconductors and related solid state devices (includes diodes, rectifiers, printed circuits integrated micro circuits, transistors, etc.)
- 1437 Transmitting and special purpose electron tubes, except X-ray
- 144* General industrial machinery
- 1440* Air and gas compressors and vacuum pumps (excludes compressors for refrigeration and air conditioning equipment)
- 1441 Ball and roller bearings
- 1442 Blowers and fans (includes dust collection and other air purification equipment)
- 1443 Filters and strainers
- 1444* Industrial furnaces and ovens
- 1445 Miscellaneous mechanical power transmission equipment
- 1446 Packing and packaging machinery
- 1447 Pumps and pumping equipment (includes hydraulic fluid power pumps, domestic water systems and pumps, oil field pumps, and spraying pumps)
- 1448 Speed changers, drives, and gears
- 145* Metalworking machinery
- 1450* Automotive maintenance equipment
- 1451 Machine tool accessories (includes small cutting tools and attachments for machine tools and metalworking machinery and precision measuring tools)
- 1452 Machine tools (metal cutting type)
- 1453 Machine tools (metal forming type)
- 1454 Power driven hand tools (includes electric and pneumatic hand tools)
- 1455 Rolling mill machinery
- 1456 Special dies, tools, jigs, and fixtures
- 1457 Welding and cutting apparatus
- 146 Miscellaneous machinery and equipment
- 1460* Appliance wire and cord and flexible cord sets
- 1461* Electrical industrial apparatus
- 14610 Capacitors, except for electronic applications
- 14611 Carbon and graphite products (for aerospace, chemical, electrical, mechanical, metallurgical, and nuclear applications)
- 14612 Industrial controls
- 14613 Motors and generators
- 14614 Rectifying apparatus

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

- 1462* Engine electrical equipment
- 1463* Engines and turbines
- 1464 Primary batteries
- 14640 Dry cells
- 14641 Fuel cells
- 14642 Wet cells
- 1465 Storage batteries
- 14650 Nonsili type storage batteries
- 14651 Sili type storage batteries
- 1466 X-Ray equipment and tubes
- 147* Office and computing machines
- 1470 Calculating and accounting machines
- 1471 Dictating, transcribing, and recording machines
- 1472 Duplicating machines
- 1473 Electronic computing machines (includes auxiliary equipment and keypunch machines)
- 1474 Mailing, letter handling, and addressing machines
- 1475 Scales and balances, except laboratory
- 1476 Typewriters
- 148* Refrigeration and service machinery
- 1480 Cooking equipment
- 1481 Household electrical and electronic appliances
- 1482 Laundry equipment
- 1483 Measuring and dispensing pumps (includes gasoline, lubricating oil, and grease pumps)
- 1484* Refrigeration, air-conditioning, and heating equipment
- 1485 Vending machines
- 149* Special industry machinery
- 1490* Chemical manufacturing and petroleum refining machinery
- 1491* Construction and related machinery (includes cranes, mixers and pavers, scrapers, graders, rollers, tractors, trucks, trailers and wagons, conveyors, elevators and escalators, hoists, monorails, mining machinery, and oil field machinery)
- 1492 Farm and garden machinery
- 14920 Farm machinery and equipment (includes wheel tractors, dairy machines, sprayers and dusters, planting, seeding and fertilizing machinery, harvesting and haying machinery, and plows and lists)
- 14921 Lawn and garden equipment (includes garden tractors, motor tillers, lawnmowers and snow blowers)
- 1493 Food processing machinery
- 1494* Foundry and other primary metal machinery
- 1495 Paper industry machinery
- 1496 Plastics and rubber working machinery
- 1497 Printing trades machinery
- 1498 Textile machinery
- 1499 Woodworking machinery
- 15* Mining (extraction of minerals occurring naturally: solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas, the term "mining" is also used in the broad sense to include quarrying, well operation, milling (e.g., crushing, screening, washing, flotation) and other preparation customarily done at the mine site or as part of mining activity)
- 150 Anthracite mining
- 151* Bituminous coal and lignite mining
- 152* Metal mining
- 1520 Bauxite and other aluminum ore mining (includes drying, calcining, activating, and sintering)
- 1521 Copper ore mining (includes the recovery of copper concentrates by precipitation and leaching or copper ore. For the recovery of refined copper by leaching copper concentrates, see primary metal manufacture)
- 1522 Ferroalloy ore mining, except vanadium (for the mining of manganiferous ores valued chiefly for their iron content, see iron ore mining.)
- 1523 Gold and silver ore mining

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

- 1524* Iron ore mining (includes the production of sinter and other agglomerates, except those associated with blast furnace operations)
- 1525 Lead and zinc ore mining
- 1526 Mercury ore mining
- 1527 Miscellaneous metal ore mining
- 1528 Uranium-radium-vanadium ore mining
- 153* Nonmetallic mineral mining and quarrying, except fuels
- 1530 Chemical and fertilizer mineral mining
- 15300 Barite mining
- 15301 Fluorspar mining
- 15302 Phosphate rock mining
- 15303 Potash, soda, and borate mineral mining
- 15304* Rock salt mining
- 15305 Sulfur mining
- 1531 Clay, ceramic, and refractory mineral mining
- 1532 Gypsum mining
- 1533 Miscellaneous nonmetallic mineral mining and quarrying
- 1534 Sand and gravel mining
- 1535 Stone quarrying
- 1536 Talc, soapstone, and pyrophyllite mining and quarrying
- 154* Oil and gas extraction (includes oil and gas well operation and maintenance, the operation of natural gasoline and cycle plants, and the mining and extraction of oil from oil sands and oil shale, also includes activities such as emulsion breaking and desilting of crude petroleum, customarily done at the field site)
- 1540 Crude petroleum production
- 1541 Natural gas liquids production
- 1542 Natural gas production
- 16 Miscellaneous products
- 160 Brooms and brushes
- 161 Burial caskets
- 162 Costume jewelry and notions
- 1620 Artificial flowers
- 1621 Buttons
- 1622 Costume jewelry
- 1623 Needles, pins and fasteners
- 163* Hard surface floor, wall, and counter coverings (includes linoleum and asphalted-felt-base and supported plastic floor coverings)
- 164* Jewelry and silverware (for plated ware, see fabricated metal product manufacture)
- 165 Musical instruments
- 166 Signs and advertising displays
- 167* Toys and sporting goods
- 1670 Dolls
- 1671 Games, toys, and children's vehicles
- 1672 Sporting and athletic goods
- 168 Writing instruments and art supplies
- 1680* Art supplies
- 1681 Carbon paper and inked ribbons
- 1682 Marking devices (includes hand stamps, seals, and stencils)
- 1683 Pencils and crayons
- 1684 Pens
- 17* Ordnance and accessories (covers the use of chemicals in the construction, operation, and maintenance of ordnance and ordnance accessories)
- 170* Ammunition, except nuclear.
- 1700* Biological and chemical warfare agents (includes war gases and germs, screening smokes, signaling smokes, and incendiary and thickening agents).
- 1701 Bombs.
- 1702 Grenades.
- 1703 Land mines and underwater mines.
- 1704 Pyrotechnics (includes flares, signals, and fireworks).
- 1705* Rocket warheads and explosive components.
- 1706 Small arms and artillery ammunition.
- 1707 Torpedoes and depth charges.

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

- 171 Fire control equipment (equipment which controls the direction, volume and time of fire of guns or launchers by the use of certain electrical or electronic devices or by optical or mechanical systems).
- 172 Nuclear ordnance (includes nuclear bombs, projectiles, warheads and demolition charges).
- 173 Weapons (includes guns and artillery, launchers, and degaussing and mine sweeping equipment).
- 18* Paint and allied products.
- 180* Exterior oil base paint products.
- 1800 Automotive and machinery refinish paints and enamels (includes primers and undercoaters, excludes lacquers).
- 1801 Barn and roof paints.
- 1802 Exterior house paints (includes tinting bases, primers and undercoaters, interior-exterior floor paints).
- 1803 Marine paints and enamels, except industrial marine paints.
- 1804 Metallic paints.
- 1805 Stains (exterior) (includes shingle and shake stains).
- 1806 Traffic paints.
- 1807 Varnishes (exterior) (natural and synthetic oleoresinous varnishes).
- 181* Exterior water base paint products.
- 1810 All purpose water emulsion paints and tinting bases.
- 1811 Masonry water emulsion paints and tinting bases.
- 182* Industrial product finishes, except lacquers.
- 1820 Appliance, heating equipment, and air-conditioner finishes.
- 1821 Industrial maintenance paints (includes interior and exterior paints).
- 1822 Industrial marine paints.
- 1823 Insulating varnishes (electrical type).
- 1824 Machinery and equipment finishes.
- 1825 Metal paints (includes paints for sheet metal and sidings, containers and closures, and metal furniture and fixtures).
- 1826 Paper and paperboard finishes.
- 1827 Powdered coatings.
- 1828 Transportation equipment paints (original finishing only).
- 1829 Wood paints (includes paints for wood composition board and wood furniture and fixtures).
- 183* Interior oil base paint products.
- 1830 Interior oil base wall and trim paints (includes tinting bases, primers, and undercoaters).
- 1831* Stains (interior).
- 1832 Varnishes (interior).
- 184* Interior water base paint products.
- 1840 Interior water emulsion wall and trim paints.
- 185 Lacquers (includes acrylic lacquers).
- 1850 Automotive original and refinish lacquers.
- 1851 Fabricated metal lacquers.
- 1852 Paper and paperboard lacquers.
- 1853 Wood lacquers.
- 187* Putty and allied products.
- 1860 Paint and varnish removers.
- 1861 Putty and glazing compounds.
- 1862 Wood and textile preservatives (nonpressure type).
- 187 Related paint products.
- 1870 Bleached shellacs.
- 1871 Ink vehicles.
- 1872 Pigment dispersions.
- 188 Thinners (thinners for dopes and lacquers and oleoresinous thinners).
- 19* Paper and allied products.
- 190 Building paper and board mill products.
- 1900 Construction paper.
- 1901 Insulating board.
- 191* Miscellaneous converted paper products.
- 1910* Bags, except textile bags.
- 1911 Coated and glazed paper products.
- 19110 Coated printing paper.
- 19111 Gummed products.
- 19112* Laminated or coated paper rolls and sheets (for packaging applications).

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

- 19113* Oiled, waxed and wax-laminated paper.
- 19114 Pressure sensitive tape.
- 1912* Die-cut paper and board products (includes filing cards and folders, bottle caps and closure, automotive panel and trim, and pasted, lined, laminated, or surface-coated paperboard).
- 1913* Envelopes and stationery products (includes tablets, notebooks, and loose-leaf paper).
- 1914* Pressed and molded pulp goods (includes food packaging trays, serving plates, egg cartons, and molded pulp, or paper mache for bituminous fiber pipe, sewer, and drainage conduit and fittings).
- 1915* Sanitary paper products (includes sanitary napkins and tampons, tissues and towels, and disposable diapers).
- 1916 Wallpaper.
- 1917 Wrapping paper.
- 192* Paper mill products, except building paper.
- 1920 Bleached bristols (smooth cardboard).
- 1921 Book paper.
- 1922 Groundwood paper.
- 1923 Newsprint.
- 1924* Packaging and industrial converting paper.
- 1925* Special industrial paper.
- 193* Paperboard containers and boxes (includes containers for food and beverages, soaps and detergents, tobacco and cigarettes, cosmetics and drugs, apparel and hosiery, as well as corrugated shipping cartons).
- 194* Paperboard mill products.
- 1940 Combination furnish paperboard (includes carton board, linerboard, and panel, and wallboard).
- 1941 Packaging and industrial converting paperboard.
- 1942 Semicheical paperboard.
- 1943 Wet machine board.
- 195* Pulp mill board (includes woodpulp, cotton linter pulp and pulp, made from straw, rag, flax, deinked paper, and bagasse).
- 20* Petroleum refining.
- 200* Petroleum blending and compounding, (includes the manufacture of fuel oils, gasoline, lubricating oils and greases, and paving, and roofing materials).
- 201* Petroleum cracking and other catalytic processes.
- 202 Petroleum distillation.
- 203* Petroleum treatment, except blending, cracking, and distillation (includes such treatment as acid treatment, clay treatment, dewaxing, blowing, and sweetening).
- 204* Waste oil recovery.
- 21* Plastic and rubber materials and synthetics (not fabricated).
- 210* Cellulosic manmade fibers.
- 2100 Acetate fibers.
- 2101 Rayon, viscose, and cuprammonium process fibers.
- 211* Natural rubber.
- 212* Noncellulosic organic fibers.
- 2120 Acrylic and modacrylic fibers.
- 2121 Polyamide fibers.
- 2122 Polyester fibers.
- 2123 Polyolefin fibers.
- 213* Plastic materials and resins.
- 2130 Thermoplastic resins and plastics.
- 2131 Thermosetting resins and plastics.
- 214* Synthetic rubber (includes rubber and other synthetic vulcanizable elastomers).
- 22* Primary metals.
- 220* Blast furnace and electric furnace products (includes pig iron, slag, sinter, blast furnace, gas and ferroalloys).
- 221* Heat treated metals.
- 222* Iron and steel foundry products (includes gray iron castings, malleable castings, steel investment castings, carbon steel castings, and alloy steel castings).
- 223* Metal powders and pastes.

APPENDIX III.—Alphabetical list of chemical use applications, with associated codes in lexical order—Continued

- 224* Nonferrous foundry products (includes nonferrous pipe and tube, rod, bar, and shapes, sheet, strip and plate, and wire).
- 226 Primary nonferrous metals (nonferrous metals obtained directly from ore).
- 227 Secondary nonferrous metals (nonferrous metals recovered from scrap by remelting and refining).
- 228* Steel mill products (includes steel ingot, wire, and related products, pipe and tubes, press and hammer steel forgings, hot- and cold-finished bars and bar shapes, and hot- and cold-rolled sheet and strip).
- 23 Printing and bookbinding operations.
- 230* Bookbinding and related operations.
- 2300* Book gilding, bronzing, edging, deckling, embossing, and gold stamping.
- 2301* Bookbinding.
- 231* Printing operations.
- 2310 Electrotyping and stereotyping.
- 2311* Lithographic platemaking (includes diazo type plates, wipon plates, deep etch plates, and multimetal plates).
- 2312* Photoengraving.
- 2313 Typesetting.
- 24* Printing inks.
- 240 News inks.
- 2400 Letterpress news inks.
- 2401 Lithographic news inks.
- 241 Packaging inks.
- 2410 Flexographic packaging inks.
- 2411 Gravure packaging inks.
- 2412 Letterpress packaging inks.
- 2413 Lithographic packaging inks.
- 242 Publication inks.
- 2420 Gravure publication inks.
- 2421 Letterpress publication inks.
- 2422 Lithographic publication inks.
- 243 Screen printing inks.
- 244 Stencil inks.
- 245 Textile printing inks.
- 25 Sanitizing agents, polishes, and cosmetics.
- 250 Cosmetics and toilet preparations.
- 2500 Bath preparations (includes bath salts and tablets and bubble baths).
- 2501 Dental preparations and mouthwashes (includes toothpastes, powders, and denture cleaners, mouthwashes, rinses, and breath fresheners).
- 2502 Deodorants and antiperspirants (includes underarm, feminine hygiene, and foot deodorants).
- 2503 Face and body makeup.
- 2504 Manicuring preparations (includes nail lacquers and enamels, lacquer, enamel, and cuticle removers).
- 2505 Perfume, cologne, and toilet water.
- 2506 Shampoos and hair preparations (includes hair and scalp conditioners, permanents, hair dressings, hair coloring preparations, hair sprays, and hair rinses).
- 2507 Shaving preparations and depilatories (includes preshave and aftershave preparations and styptics).
- 2508 Skin cleansers, creams, and lotions.
- 2509 Suntan and sunscreen preparations.
- 251* Polishes and sanitizing agents.
- 2510* Detergents, soaps, and disinfectants.
- 25100 Dairy, farm, and food plant cleaners and disinfectants.
- 25101 Machine and hand dishwashing compounds.
- 25102 Mechanics' hand cleaners, except waterless.
- 25103* Metal cleaners.
- 25104* Scouring cleansers and presoaks.
- 25105* Soap bars and flakes, and soap and detergent powders.
- 2511* Polishes and related products.
- 25110 Automobile body polishes and cleaners.
- 25111 Floor polish.
- 25112* Furniture polishes and cleaners.
- 25113 Leather dressings and finishes, except shoe polish.
- 25114* Metal polish (includes polishing cloths and papers).
- 25115 Shoe polishes and cleaners.
- 2512* Specialty cleaners.

APPENDIX III.—*Alphabetical list of chemical use applications, with associated codes in lexical order—Continued*

APPENDIX III.— <i>Alphabetical list of chemical use applications, with associated codes in lexical order—Continued</i>		2644	Mineral wool products (includes fiber, batts, blankets, rolls, blocks and boards for structural, industrial, and equipment insulation)	2721	Knitted fabrics (includes greige goods, backing and lining fabrics and upholstery fabrics)	
25120	Glass cleaners	2645	Nonclay refractories	2722	Knitted outerwear	
25121*	Laundry and ironing aids	2646	Statuary and art goods	2723	Knitted underwear	
25122	Oven cleaners	265*	Pottery and related products	273*	Miscellaneous textile products	
25123*	Room deodorizers	2650	Ceramic food utensils (includes tableware and cookware)	2730*	Coated fabrics, except rubberized (includes coatings of vinyl, pyroxylin, polyurethane, polyolefins, polyamides, fluoride polymers, etc.)	
25124	Rug and upholstery cleaners	2651	Chemical, technical, and industrial pottery ware	2731	Cordage and twine	
25125	Sweeping compounds	2652	Decorative pottery ware	2732	Felt goods	
25126*	Toilet bowl cleaners and drain pipe solvents	2653	Porcelain electrical supplies	2733	Jute goods	
25127*	Wallpaper, window shade and wall cleaners	2654	Vitreous plumbing fixtures, accessories, and fittings	2734	Lace goods	
25128	Waterless hand cleaners	266*	Pressed or blown glass and glassware	2735*	Nonwoven fabrics and products	
26	Stone, clay, glass, and concrete products	2660	Chemical, technical, and industrial glassware	2736	Padding and upholstery filling	
260*	Concrete, gypsum, and plaster products			2737*	Processed textile waste (includes recovered fibers, flock, and oakum)	
2600	Concrete blocks and bricks	2661	Decorative glassware	2738*	Scouring and combing mill products (includes scoured wool, tops and noils, nubs and slubs)	
2601	Concrete pipe (includes culvert pipe, storm sewer pipe, sanitary sewer pipe, pressure pipe, irrigation pipe and drain tile, manholes and conduits)	2662	Glass containers	2739*	Tire cord and fabrics	
		2663	Lighting and electronic glassware	274	Narrow fabric mill products	
		2664	Table and kitchen glassware	2740	Braided narrow fabrics	
		267*	Structural clay products	2741	Covered rubber threads	
2602	Gypsum products (include building plasters and prefabricated building materials)	2670	Brick and structural clay tile	2742	Woven narrow fabrics	
		2671	Ceramic pipe and drain tile	275*	Weaving mill products (includes natural fabric, synthetic fabrics, and natural/synthetic blends)	
2603	Lime products (includes agricultural and building lime, hydrated lime, lime plaster, quicklime, mason's lime, and dolomitic lime)	2672	Ceramic wall and floor tile			
		2673	Clay refractories	276*	Yarn and thread mill products (includes spun yarn, rewound, plied and novelty yarn, textured yarn, thrown filament yarn, and thread)	
2604	Precast concrete products (includes structural concrete products, septic tanks and burial vaults)	2674	Vitrified clay sewer pipe and fittings	28*	Transportation equipment and facilities (covers the use of chemicals in the construction, operation and maintenance of transportation equipment and facilities)	
		27*	Textile mill products (this category includes products from both natural and synthetic minerals)	280*	Aircraft and parts	
		270*	Finished textile products	281*	Guided missiles and space vehicles and parts	
2605	Prestressed concrete products	2700*	Bleached and white finished fibers, yarn, and fabrics	282*	Miscellaneous transportation equipment (includes recreational vehicles, golf carts, snowmobiles, all-terrain vehicles, and tanks)	
2606	Ready mixed concrete	APPENDIX III.— <i>Alphabetical list of chemical use applications, with associated codes in lexical order—Continued</i>			283*	Motor vehicles and equipment (includes automobiles, trucks and buses, and parts and accessories)
261	Cut stone and stone products (includes granite, limestone, marble, and other stone for buildings and monuments)			284*	Motorcycles, bicycles, and parts	
				285*	Railroad cars and equipment (includes trolley cars and subways)	
262*	Flat glass products	2701*	Other finished fibers, yarn, and fabrics (includes flameproofing, rotproofing, mercerizing, embossing, antistatic finishing, creaseproofing, soilproofing, waterproofing, etc.)	286*	Ships and boats	
2620	Laminated glass	2702*	Plain dyed and finished fibers, yarn, and fabrics	287*	Transportation facilities	
2621	Mirrors	2703*	Printed and finished fabrics	2870*	Transportation equipment service and repair facilities	
2622	Plate and float glass	271*	Floor coverings (textile)	2871	Transportation terminals (includes airports, docks, and train and bus stations)	
2623	Sheet glass	2710	Miscellaneous carpet, rugs, and mats (includes knitted, braided, hooked, needlepunched, paper yarn, and vegetable fiber floor coverings)			
2624	Tempered glass	2711	Tufted carpet and rugs			
263	Hydraulic cement	2712	Woven carpet and rugs			
264	Miscellaneous nonmetallic mineral products	272*	Knitting mill products			
		2720	Hosiery			
2640*	Abrasive products (includes grinding wheels, sticks, stones, hones, balls and bricks, buffing wheels, polishing wheels, and laps)					
2641	Asbestos products (includes brake linings and pads, shingles and clapboard, floor tile, textiles, insulation sheet, wallboard and pipes, and felts)					
2642	Gasket, packing, and sealing devices					
2643*	Ground or treated minerals					

[FR Doc. 78-20326 Filed 7-24-78; 8:45 am]

[FR Doc. 78-20326 Filed 7-24-78; 8:45 am]

Registered for

TUESDAY, JULY 25, 1978
PART III



DEPARTMENT OF
HEALTH,
EDUCATION, AND
WELFARE

Public Health Service

■

HEALTH MAINTENANCE
ORGANIZATIONS

Continued Regulation of HMO's
and Other Entities

[4110-85]

Title 42—Public Health

CHAPTER I—PUBLIC HEALTH SERVICE,
DEPARTMENT OF HEALTH,
EDUCATION, AND WELFAREPART 110—HEALTH MAINTENANCE
ORGANIZATIONSSubpart I—Continued Regulation of
Health Maintenance Organizations
and Other EntitiesAGENCY: Public Health Service,
HEW.

ACTION: Final regulation.

SUMMARY: This rule sets forth the enforcement and compliance procedures with respect to health maintenance organizations (HMOs) and other entities subject to title XIII of the Public Health Service Act (the act), which fail to comply with the assurances which they have given the Secretary under the act.

EFFECTIVE DATE: August 24, 1978.

FOR FURTHER INFORMATION
CONTACT:

Ann R. Haendel, Division of Health Maintenance Organizations, Qualification and Compliance, Office of Health Maintenance Organizations, 5600 Fishers Lane, Parklawn Building, Room 16A-08, Rockville, MD. 20857, 301-443-2778.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking was published on September 17, 1976, in the FEDERAL REGISTER (41 FR 40292-95) which proposed procedures for continued regulation of HMOs and other entities subject to title XIII of the Public Health Service Act (the act). Interested persons were invited to submit written comments, suggestions, or objections. Nine organizations submitted comments on or before the deadline and one comment was received following the comment period. All comments were considered in developing this final regulation. Shortly after the notice of proposed rulemaking was published, title XIII of the act was amended by Pub. L. 94-460, the HMO Amendments of 1976.

This regulation implements the requirements of those amendments and contains changes made as a result of the public comments. Comments requesting greater specificity were appropriately incorporated in this regulation. Suggested changes in provisions required by statute were rejected. Other relevant comments are summarized as follows:

1. Four commenters suggested changes in the handling of reporting requirements described in § 110.903(b).

Their comments related to the lead time for reports, and one of the four suggested that there be a 30 day comment period prior to the adoption of final reporting requirements. Also, the proposed regulation provided that notices of new reporting requirements under section 110.903(b) be published in the FEDERAL REGISTER at least 90 days prior to their effective date. The Secretary has carefully considered the suggested comment period as well as the advisability of the 90 day notice interval. He has, however, concluded that their adoption would have unnecessarily limited his administrative discretion in matters such as enforcement proceedings under § 110.904, and, therefore, has adopted neither.

2. Ten organizations commented on the enforcement provisions of § 110.904. Five of the organizations expressed concern over the provision that any person or entity may file complaints against an HMO. The proposed regulations have not been changed in this respect, since the Secretary's concern is with the HMO's compliance with applicable requirements, not with who brings these matters to his attention. It is also noted that if the commenters' concern was over the filing of frivolous complaints, the Secretary can summarily dispose of them.

3. Six commenters expressed concern that the HMO would not receive a full copy of the complaint. Since an actual copy of the complaint may contain facts and allegations not necessary in order for an HMO to submit a responsive report under § 110.904(b) or to take corrective action (for example, where a complaint has been filed by an HMO employee who might be subject to retaliatory action by the HMO, the Secretary believes that release of the complainant's name may not be necessary), the regulation has been changed to indicate that the Secretary will provide the HMO with a full statement of the pertinent facts and of the matters the Secretary is investigating.

4. Three comments expressed concern over the decisionmaking process of § 110.904 as proposed and requested that a meeting between the Secretary and the HMO be prescribed prior to issuing a determination under this section. Other comments suggested that the effective date of any determination be set sufficiently in advance so as to permit the HMO an opportunity to appeal. With respect to the initial determination of non-compliance, the regulation now provides that before this determination is made the HMO will be given a full statement of the pertinent facts and of the matters being investigated and an opportunity to respond. (§ 110.904(b)). With respect to a determination that an HMO is no

longer a qualified HMO, the regulation provides that the Secretary will notify an HMO of the basis for any determination of non-compliance, and that the Secretary will grant the HMO 30 days or such longer time as the Secretary may determine to be reasonable, to initiate and carry out corrective action. Where appropriate, the Secretary will give the HMO the opportunity to submit for his approval proposed methods for achieving compliance (§ 110.904(c)). In addition, the effective date of a revocation of qualification is prescribed as the 5th working day after the HMO receives the notice of revocation (§ 110.905(d)). In light of these provisions and the Secretary's intention to make available to HMO's a further administrative review before revoking qualification where he deems this review to be appropriate (for example, where there are factual issues in dispute), it is the Secretary's view that the concerns noted above have been adequately addressed.

5. Two organizations commented on the provision of § 110.906 (now numbered as § 110.905) requiring notification of HMO members of a revocation of qualification. Since section 1312 of the act, as amended, requires this notification, this final regulation retains the provision.

6. One organization sought to expand the basis for waiving assurances in § 110.908 (now § 110.907) to include a waiver in certain circumstances of the requirement that an HMO offer the full range of basic health services. Since an HMO may not retain its qualification if the Secretary waives any of its assurances regarding its compliance with section 1301 of the act (which includes the requirement for offering all basic health services), this suggestion has been rejected. In addition, the regulation has been clarified to indicate that if the Secretary waives any of these assurances he will also revoke the HMO's qualification.

Since section 1312 of the act has been amended, it is believed that the "suspension" of qualification is without statutory basis; therefore, provisions regarding "suspension" have been deleted from this final regulation.

In addition, a new remedy has been added at § 110.904(d)(3) which provides for the reimbursement of members of an HMO for their expenses in obtaining health services which, due to the HMO's failure to provide basic or supplemental health service in accordance with assurances given to the Secretary, they secured other than through the HMO or for which the HMO imposed a charge in a manner inconsistent with these assurances. Although this provision was not included in the September 17, 1976, Notice of

Proposed Rulemaking, it is included in this final regulation without advanced notice, since it is among those remedies which were generally referred to in the 1976 Notice as being available to the Secretary, and is, therefore, within the scope of the subjects and issues involved therein.

The Assistant Secretary for Health for the Department of Health, Education, and Welfare, with the approval of the Secretary of Health, Education, and Welfare, hereby amends 42 CFR by adding a new Subpart I.

The Department of Health, Education, and Welfare has determined that this document does not contain a major proposal requiring preparation of an Inflation Impact Statement under Executive Order 11821 and OMB Circular A-107.

Dated: May 26, 1978.

JAMES F. DICKSON,
Acting Assistant Secretary
for Health.

Approved: July 18, 1978.

JOSEPH A. CALIFANO, Jr.,
Secretary.

Subpart I—Continued Regulation of HMO's and Other Entities

- Sec.
110.901 Purpose and applicability.
110.902 Compliance with assurances.
110.903 Reporting requirements.
110.904 Enforcement procedures.
110.905 Effect of revocation of qualification for purposes of section 1310.
110.906 Reapplication for qualification.
110.907 Waiver of assurances.

AUTHORITY: Sec. 215, 58 Stat. 690 (42 U.S.C. 216); secs. 1301-1316, as amended, 90 Stat. 1945-1960 (42 U.S.C. 300e-300e-15).

Subpart I—Continued Regulation of Health Maintenance Organizations and Other Entities

§ 110.901 Purpose and applicability.

This subpart applies to any entity which was determined by the Secretary to be a qualified health maintenance organization (HMO) under subpart F of this part, or which provided written assurances to the Secretary as a condition for receiving financial assistance under subparts C, D, or E of this part, and sets forth procedures for enforcing the assurances given to the Secretary by these entities.

§ 110.902 Compliance with assurances.

Any entity subject to this subpart shall comply with the assurances which it provided to the Secretary, unless compliance is waived under § 110.907.

§ 110.903 Reporting requirements.

Entities subject to this subpart shall submit:

- (a) The reports which may be required by the Secretary under § 110.108(o), and,
- (b) Any additional reports the Secretary may reasonably require.

§ 110.904 Enforcement procedures.

(a) *Complaints.* Any person, group, association, corporation, or other entity may file a written complaint with the Secretary with respect to the compliance of any entity with assurances it gave to the Secretary under this part. A complaint shall state the grounds and underlying facts of the complaint, the names of all persons involved, and that all appropriate grievance and appeals procedures established by the entity and available to the complainant have been exhausted.

(b) *Investigations.* The Secretary may initiate investigations when, based on a report, a complaint, or any other information, he has reason to believe that an entity subject to this subpart is not in compliance with any assurances it gave to the Secretary under this part. The Secretary will notify the entity in writing when an investigation has been initiated. He will include in this notice a full statement of the pertinent facts and of the matters being investigated, and a statement that the entity may submit to him within 30 days from the date of the notice a written report concerning these matters. The Secretary will obtain any information he considers necessary to determine the issues and may employ site visits, public hearings, or any other procedures he considers appropriate to obtain this information.

(c) *Determinations and notifications by the Secretary.* (1) *Determinations.* On the basis of his investigation, the Secretary will determine whether the entity has failed to comply with any assurances it gave to the Secretary under this part. The Secretary will publish in the FEDERAL REGISTER a notice regarding each determination of noncompliance. In the case of a qualified HMO, a determination of noncompliance shall not affect its status as a qualified HMO, unless the Secretary makes the further determination described in paragraph (d)(1) of this section.

(2) *Notification of determination; corrective action.* The Secretary will notify the entity in writing of his determination. This notice shall specify the manner in which the entity has not complied with its assurances and shall direct the entity to initiate corrective action which the Secretary deems necessary to bring the entity into compliance. The entity shall initiate this corrective action within 30

days of the date on which the notice is issued by the Secretary or within any longer period which the Secretary determines to be reasonable and specifies in the notice. The entity shall carry out the corrective action within the period specified for that purpose by the Secretary. In the notice, the Secretary may provide the entity an opportunity to submit for his approval proposed methods for achieving compliance.

(d) *Remedies.*—(1) *Qualified HMO's:* If the Secretary determines that a qualified HMO (A) has failed to initiate corrective action in accordance with paragraph (c)(2) of this section, or (B) has not carried out or refuses to carry out corrective action in accordance with paragraph (c)(2) of this section, the Secretary will, for purposes of section 1310 of the act, revoke the HMO's qualification and will notify the HMO of this action. The Secretary shall publish in the FEDERAL REGISTER each determination under the subparagraph. A revocation under this subparagraph shall have the effect described in § 110.905. Within 15 days after the date a notice of revocation is issued by the Secretary, the HMO shall, in a notice written in readily understandable language, describe the reasons for the determination that it is not a qualified HMO and shall send the notice to:

- (i) The members of the HMO;
- (ii) Each employer or public entity which has offered membership in the HMO in compliance with section 1310 of the act; and
- (iii) Each lawfully recognized collective bargaining representative or other employee representative which represents the employees of the employer or public entity.

(2) *Other entities.* If, in the case of an entity which received a grant, loan, or loan guarantee under this part, the Secretary determines that it (A) has failed to initiate corrective action in accordance with paragraph (c)(2) of this section, or (B) has not carried out or refuses to carry out corrective action in accordance with paragraph (c)(2) of this section, he may, in addition to any other remedies available to him, bring a civil action in the United States district court for the district in which such entity is located to enforce its compliance with any assurances it furnished the Secretary respecting the provision of basic and supplemental health services or its organization or operation, as the case may be, which assurances were made in connection with its application under title XIII for the grant, loan, or loan guarantee.

(3) *Reimbursement of members for services improperly denied or for charges improperly imposed.* If, in the case of an HMO with respect to which a determination of non-compliance

has been made under paragraph (c)(1) of this section the Secretary also finds that the HMO has failed to provide or arrange for health services for its members in accordance with assurances given by the HMO to him under this part, or that the HMO has provided health services but has charged the member in a manner inconsistent with these assurances, he may, in addition to the remedies listed in paragraph (d) (1) and (2) of this section, require the HMO to reimburse its members for the expenses of securing basic or supplemental health services which because of this noncompliance the members obtained other than through the HMO or for which it charged the member. The provisions of this subparagraph shall apply without regard to when the HMO failed to comply with the appropriate assurances.

§ 110.905 Effect of revocation of qualification for purposes of section 1310.

When an HMO's qualification is revoked under § 110.904(d)(1):

(a) The HMO may not seek inclusion in employees' health benefits plans under subpart H of this part.

(b) With respect to employers including the HMO in the health bene-

fits plan offered their employees, the HMO is not a qualified HMO for purposes of subpart H of this part. Following the effective date of revocation, the inclusion of the health maintenance organization in an employees' health benefits plan will be disregarded for purposes of determining whether, and to what extent, the employer is subject to subpart H of this part, and will not constitute compliance with the requirement of subpart H of this part.

(c) The HMO is not a qualified HMO for purposes of the financial assistance programs under subparts C, D, and E of this part until it is, in accordance with § 110.906, again qualified under subpart F of this part.

(d) The revocation of qualification shall be effective on the 5th working day after the HMO receives the notice.

§ 110.906 Reapplication for qualification.

An entity whose qualification as an HMO has been revoked by the Secretary for purposes of section 1310 of the act may, after completing the corrective action required under § 110.904(c)(2), reapply for a determination of qualification in accordance with the procedures specified in subpart F of this part.

§ 110.907 Waiver of assurances.

The Secretary may release an entity from compliance with any assurances given under this part for good cause shown, consistent with the purpose of title XIII of the act, except that upon the waiver of any assurance regarding the HMO's compliance with section 1301 of the act, the Secretary will revoke the qualification of the HMO unless the waiver is based on paragraph (c) of this section. Grounds upon which the Secretary will find good cause include, but are not limited to, the following:

(a) The entity has filed for reorganization under Federal bankruptcy provisions and the reorganization can only be approved with the waiver of the assurances;

(b) State laws governing the entity have been changed after it signed the assurances so as to prohibit the entity from being organized and operated in a manner consistent with the signed assurances, except to the extent that the changes would be superseded under the authority of section 1311 of the act; or

(c) Qualification requirements have been changed by a law of the United States.

[FR Doc. 78-20507 Filed 7-24-78; 8:45 am]

Registered
Federal

TUESDAY, JULY 25, 1978
PART IV



DEPARTMENT OF
THE INTERIOR

Fish and Wildlife
Service



DEREGULATION OF THE
MEXICAN DUCK

[4310-55]

Title 50—Wildlife and Fisheries

CHAPTER I—UNITED STATES FISH
AND WILDLIFE SERVICE, DEPART-
MENT OF THE INTERIORPART 17—ENDANGERED AND
THREATENED WILDLIFE AND PLANTS

Deregulation of the Mexican Duck

AGENCY: Fish and Wildlife Service,
Interior.

ACTION: Final rule.

SUMMARY: The Service determines that the Mexican duck (*Anas diazi*) is not in danger of extinction or likely to become endangered so as to be endangered or threatened as defined in the Endangered Species Act of 1973. Therefore, this species is removed from the list of endangered and threatened wildlife and plants. This action is being taken after careful review of the best available scientific data. Mexican-like ducks found within the United States will remain under the effective management and conservation provisions of the Migratory Bird Treaty Act of 1918. The Service finds (1) no population of Mexican ducks or mallard X Mexican ducks intergrades have any threat to their continued existence, (2) bases on recent information, the original reasons for the 1967 listing of *Anas diazi* are now known to have been incorrect, and (3) a more appropriate level of protection can be provided under the Migratory Bird Treaty Act of 1918 than under the Endangered Species Act of 1973.

DATE: This rule becomes effective on
August 24, 1978.FOR FURTHER INFORMATION
CONTACT:

Mr. Keith M. Schreiner, Associate
Director—Federal Assistance, U.S.
Department of the Interior, Wash-
ington, D.C. 20240, 202-343-4646.

SUPPLEMENTARY INFORMATION:

BACKGROUND

On November 28, 1977, the Service published in the FEDERAL REGISTER (42 FR 60579-60580) a notice of status review of the Mexican duck. A proposal to deregulate the Mexican duck pursuant to the Endangered Species Act of 1973, 16 U.S.C. 1531 et seq., was published March 31, 1978 (43 FR 13592-13594). That proposal summarized the factors that had led the Service to list the Mexican duck in 1967 under the Act of October 15, 1966 (80 Stat. 926). A summary of the most current (January 1978) information was also presented to indicate that

sufficient evidence was then on file to support the proposal for the deregulation of this duck. That proposal summarized the five criteria for section 4(a) of the act as they pertained to the Mexican duck, specified the effects of deregulation, and solicited comments, suggestions, objections, and factual information from interested persons. Section 4(b)(1)(A) of the act requires that the Governor of each State or Territory within which the native species of wildlife is known to occur be notified and be provided 90 days to comment before any such species is determined to be endangered or threatened or removed from the list. Letters were sent to the Governors of Arizona, New Mexico, and Texas on December 5, 1977, conveying the notice of status review and on April 7, 1978, for the proposed rulemaking. All public comments received by June 20, 1978, were considered by the Service along with all reports, publications, and other documentation on the Mexican duck. Twenty-one comments to the proposal were received from 3 States, 3 other Federal agencies, and 15 citizens or private organizations.

SUMMARY OF COMMENTS

Arizona, New Mexico and Texas supported the proposed deregulation of the Mexican duck. Various reports were provided by these States on surveys and other field work conducted by their biologists over the past few years. The U.S. Forest Service and the Bureau of Reclamation also supported this proposal. The latter agency stated " . . . this action is in the best interest of maintaining an up-to-date and accurate listing of threatened and endangered species." The Arizona Wildlife Federation, Douglas Sportsman's Club and Safari Club International also supported this measure, as did several members of Women Involved in Farm Economics. Dr. John Aldrich (Washington, D.C.) supported the proposal and, based upon current information, wrote " . . . that the statement on the status of the Mexican Duck which I prepared for the 'Red Book' (Committee on Rare and Endangered Wildlife Species, Etc., 1965, 1966), and which was the basis for the original Interior Department listing of the Mexican Duck as 'endangered', is [now] unjustified." The above statement referred to in the "Red Book" was as follows: "Endangered because of drainage of suitable marsh habitat throughout range and hybridization with Common Mallard in the United States" (emphasis added). Drs. A. G. Canaris (University of Texas at El Paso) and L. L. Short (American Museum of Natural History, New York) both supported the proposal. Dr. Short, a recognized world expert on avian hybridization and spe-

ciation, also noted the problem the Service would have in trying to maintain purity of strains or subspecies around the world that were naturally interbreeding with other forms of the same species (conspecifics). The Service recognizes that situations where two conspecific subspecies of animals naturally interbreed are of very common occurrence throughout the world.

The Bureau of Land Management did not concur with the Service's proposed action. That agency believed that the Service's rationale required additional support for the position maintained by various ornithologists that *diazi* is a subspecies of *platyrhynchos*. The Service did investigate other scientific methods of corroborating Dr. Hubbard's work that was cited in the proposal as background. First, as background, several other waterfowl taxonomists had proposed as early as 1956 that the Mexican duck was a subspecies of the common mallard. However, until 1977 no large scale, in-depth analysis of hybridization in these ducks had been published. The American Ornithologists' Union's Committee on Classification and Nomenclature of North American Birds did not have sufficient data and an accompanying analysis until late 1977 to adequately judge the situation.

Dr. Hubbard's method of using a "hybrid index" is a well recognized statistical method for analyzing hybridization. Finally, the Service found that all presently known methods of karyotyping, allozymic variation analysis, and protein analysis would not provide sufficiently reliable insight as to the taxonomic relationship between *diazi* and *platyrhynchos*. Most of these methods have great difficulty in separating congeneric, let alone conspecific, taxa.

The Bureau of Land Management also cited two earlier (1970) papers on Mexican ducks as being in contradiction with Hubbard's findings. One of these was by Dr. Aldrich, whose more recent opinion is summarized above. The other paper cited was an unpublished master's thesis at New Mexico State University. That thesis (as in many other papers known to the Service) reported visual field observation as the basis for estimating the percentage of "pure" versus "hybrid" nesting ducks in the southwestern United States. Dr. Hubbard's study has shown that these ducks are difficult to identify correctly even in the hand, let alone through telescopes or binoculars. All reports of observations of "Mexican ducks" in the United States and northern Mexico must now be interpreted to be of only "Mexican-like ducks". (The term "Mexican-like duck" refers to the duck typically

found from northern New Mexico to southern Durango that at least superficially resembles pure *Anas platyrhynchos diazi*. Finally, the Bureau urged the Service to provide additional data so that it could support the Service's proposal. We have provided a sufficient summary, in our view, of these data in this final rulemaking. Further supporting documentation to these summaries is available upon request.

The Fund for Animals (fund) strongly objected to the proposed action by the Service. The central theme of the fund's objection was that the Mexican duck would not be afforded any further protection under the Act. The Service contends that this duck would not have been listed in 1967, if the data now available had been known then. The Service also pointed out in the proposal that these ducks would still be federally protected, conserved and managed in the United States by the Migratory Bird Treaty Act of 1918 (40 Stat. 755; 16 U.S.C. 707-711). The level of protection afforded these ducks under the Endangered Species Act is not warranted.

Several other points were raised by the fund. Their letter indicated that there was an unfounded "claim that the species has recovered sufficiently to be considered out of danger * * *". The fund repeatedly referred to the estimated 100 phenotypically pure Mexican ducks in the United States as being a "population" worthy of protection. The term "phenotypic" was also misinterpreted or ignored in some statements by the fund in claiming that a number of "pure Mexican ducks" still existed in the United States. The fund also stated that habitat changes had been made by agricultural interests in violation of the Endangered Species Act of 1973. The hybridization with the common mallard "especially," was cited by the fund as the "major factor in the decline of the Mexican ducks." Pressure from hunting interests was alleged by the fund to be the major force in the Service's actions in this matter. In their summary, the fund stated " * * * the plight of the Mexican ducks has worsened, not improved, in recent years." The fund's position was supported by 12 other organizations belonging to Monitor.

The Service responds to the above specific points as follows: First, the Act defines a species under section 3 as:

The term "species" includes any subspecies of fish or wildlife or plants and any other group of fish or wildlife of the same species or smaller taxa in common spatial arrangement that interbreed when mature.

Phenotypes are not, under this definition, permitted to be listed. Otherwise, member of the cinnamon phases of the black bear (*Ursus americanus*), blue phases of the lesser snow goose (*Chen caerulescens caerulescens*), or "Baltimore" orioles found in the zone of intergradation between that subspecies (*Icterus galbula galbula*) and the western "Bullock's" orioles (*Icterus galbula bullockii*) could all be candidates for listing because of their rarity in some segments of those species' populations. Phenotypes, such as the "Mexican ducks" in the United States, are not interbreeding solely among themselves, since they are only identifiable segments of the entire population, just as brown-eyed and blue-eyed individuals are phenotypic segments of the human species.

The three phenotypes found in the zone of intergradation (see map, 43 FR 13593) are the two parental forms (*Anas platyrhynchos platyrhynchos* and *Anas platyrhynchos diazi*) and the intergrade form. In the 1960's the New Mexico Department of Game and Fish attempted to propagate and release pure Mexican ducks from what they thought were genotypically pure stock from the United States and Mexico. This stocking program was abandoned when the offspring of such matings showed obvious hybrid characteristics. The Service now estimates that there is only a very remote possibility (perhaps 1 in 10,000 or 100,000) that any genotypically pure Mexican ducks are present in the United States or northern Chihuahua, Mexico. Such individuals would only be the result of chance recombination of genes from non-genotypically pure parents.

The Service has no data demonstrating a decline in the total United States or Mexican populations of the Mexican ducks or the hybrids. On the contrary, data now available shows at least a stable population in most areas and an increase in overall distribution of these ducks in Arizona and Texas. In a May-June 1978 survey conducted by the National Audubon Society the total minimum population of Mexican and Mexican-like ducks was estimated to be 55,500 in Mexico. These ducks were most commonly found in agriculture areas, which again demonstrates the adaptability of this duck to changing environments.

The interbreeding between the common mallard and the Mexican duck has, by all reliable estimates, been taking place for many hundreds, if not thousands, of years. The zone of interbreeding was restricted to the narrow band of habitat along the Rio Grande in New Mexico and western Texas prior to agricultural practices by man, particularly in the first half of this century. These activities reduced the natural wetlands but in-

creased the available food supplies and created new, artificial wetlands. The Mexican and Mexican-like ducks in the United States and Mexico began using these small impoundments and irrigation ditches. The Service knows of no water projects or other activities started or completed since passage of the present act that may have adversely affected these ducks or their habitats. The ducks nesting from northern New Mexico to Chihuahua have always been uncommon simply because of the general lack of sufficient water.

The Environmental Defense Fund (EDF) strongly opposed the Service's proposed deregulation of the Mexican duck based largely on the legal precedent it would, in their view, establish. EDF made some thoughtful statements that the Service also agrees should be a part of the policy of the endangered species program. Their letter stated "that other conspecific subspecies may be abundant, even extraordinarily abundant, is simply irrelevant, as a legal matter, to the question whether the Mexican duck subspecies (or some population thereof) should be considered endangered." EDF incorrectly assumed that the Service was implying in the proposed action that, because of the abundant population of mallards (estimated in North America to be about 9 million birds in May 1978), the Mexican duck subspecies was not worthy of protection under the act. One has only to carefully examine the entire list of endangered and threatened wildlife and plants (42 FR 36420-36431, July 14, 1977) to find abundant examples of subspecies being listed where other conspecific subspecies are not. The latter are frequently very abundant; the former are threatened with extinction or becoming endangered. The Service considered the threats to just the intergrade population of Mexican-like ducks (including the resident nesting mallards) from northern New Mexico to Chihuahua and Durango. After an extensive search, the Service could find no evidence of threats to the continued existence of this population of ducks. On the contrary, a stable or increasing population with an expanding range was well documented.

The EDF also raised the question of the red wolf (*Canis rufus*) compared to the Mexican duck. The wolf population in the southern United States was greatly reduced first by man's activities. It is now being further threatened by genetic swamping from both coyotes (*Canis latrans*) and stray dogs (*Canis sp.*). The population density of any surviving wolves has been so low that these animals are now forced to select other more abundant and related species for mates. This is not the

case with the ducks under discussion here. The definitions of subspecies and species used by most zoologists includes the concept of "freely interbreeding individuals." Dr. Hubbard's study shows that there have not been any reproductive isolating mechanisms established between the mallard and Mexican duck. Subspecies in contact with other conspecifics will always freely interbreed, otherwise they would not be considered conspecific.

A further concern expressed by EDF was that the Service would not protect U.S. segments of a species (or subspecies) that was relatively abundant outside the United States. EDF then cited the listing of several animals as indicators of the existence of such a policy by the Service. The Everglade kite (*Rostrhamus sociabilis plumbeus*) was one example cited. This subspecies is restricted to Florida. The endangered American crocodile (*Crocodylus acutus*) is only listed for Florida. The discrete U.S. population is separated by the Florida Straits from any significant genetic influence from the rest of the crocodile population. The listing of the gray wolf (*Canis lupus*), as well as the bald eagle (*Haliaeetus leucocephalus*) and the grizzly bear (*Ursus arctos horribilis*), involve remnants of once large and wide-ranging populations. The Service interprets the act as not being applicable to listing a "population" of a few pairs of a species (or subspecies) that have only a peripheral range in the United States.

That the Mexican duck in central Mexico has survived in such numbers as are now indicated is impressive. The ducks are very adaptable to man's agricultural practices throughout their range. No evidence of threats from hunting or habitat loss have been found for any significant portion of the Mexican duck or mallard X Mexican duck populations.

Several individuals expressed opposition to the Service's proposal. Dr. F. R. Gehlbach (Waco, Tex.) cited four reasons for opposing this action: (1) Increase in incidence of intergradation "... due to the activities of man in historic time," (2) populations of intergrades and hybrids are valuable to science, (3) decreasing numbers of intergrades in the U.S. from habitat losses, and (4) the preservation of the U.S. populations as "... extraordinary fine, natural laboratory examples of how man modifies natural gene pools." The Service recognizes the scientific value of preserving populations of naturally interbreeding subspecies or species. However, to be listed under the Act, that population (and not just one phenotype) must meet the criteria of Section 4(a) as summarized in the proposal. The Service has no data, nor

was any documentation reported by Dr. Gehlbach or any other commentator on this proposal, to show a significant increase in mallards or intergrades or a significant decrease in Mexican-like ducks over any given time period. The first U.S. specimen of a Mexican-like duck was an intergrade collected in 1893 at El Paso, Tex. Modifications of gene pools as a result of man's activities have been well documented in several other bird groups in the Great Plains. Eastern and western woodland species have come into extensive contact with their counterparts in the new woodlands planted by man in the former prairies. The Service does not consider those interbreeding bird populations as candidates for listing under the Act because of the man-related changes in their specific gene pools.

Mr. Tony Gallucci (Alpine, Tex.) opposed the proposal on the basis, in part, that Dr. Hubbard's study presented little data on Texas Mexican-like ducks. He correctly pointed out that Presidio County, Tex., has one of the largest concentrations of Mexican-like ducks in the United States and that those birds are probably the purest population in the United States. Purity of these ducks is not of concern to the Service in this case, only the threats, if any, to the continued existence of the whole intergrade population, or any significant portion thereof.

Another individual, Richard M. Kerr (Littleton, Colo.), cited past Federal and State actions to protect and manage the Mexican-like ducks in the United States based upon an "erroneous" listing made in 1967. He felt that the Service's proposed action would nullify those past actions to benefit the ducks and, perhaps in some cases, could cause suits to be filed against these Federal or State agencies about those past actions. The best scientific data available in 1967 clearly supported listing "*Anas diazi*" as endangered. However, more recent data and analysis of the status of these ducks has definitely changed those views held 10 years ago. The Service acknowledges that a large amount of time, money, and effort has been spent in the past on behalf of the Mexican duck by Federal, State, and private organizations. However, this past level of conservation effort, by itself, does not meet any of the Act's factors for continued classification as endangered (or threatened). In fact, the Service must respond to the wealth of evidence on the current status of this duck which was generated by the attention given it while thought to be endangered.

Dr. W. A. Davis (Tucson, Ariz.) objected to the Service's proposal because he believed some of the current data considered by the Service was erroneous. In particular, he cited the

ratio of intergrades to "pure" Mexican ducks in Cochise County, Ariz., as reported by himself, and, separately, a graduate student. As the Service has noted in this summary of comments, positive identifications of "Mexican ducks" in the United States are not possible unless the birds are in hand, and even then birds that phenotypically resemble Mexican ducks are almost certainly not genotypically pure. Visual observations, such as those reported by Dr. Davis, cannot be used to determine ratios or degree of intergradation. Such observations do demonstrate that the occurrence of males of the common mallard phenotype decreases rapidly as one proceeds southward into Chihuahua, Mexico.

CONCLUSION

The Service has summarized and responded to all substantive comments received on this proposal as accurately and completely as possible. In an effort to insure that the public record is clear on the reasons the Service takes this final action, a summary of the most important points is given below:

(1) *Anas platyrhynchos diazi* has been recently determined by ornithologists to be a subspecies of the common mallard (*Anas platyrhynchos*). A large zone of intergradation between these two subspecies exists from northern New Mexico to southern Durango, Mexico. In this region, annual precipitation levels are the lowest for any segment of the geographical distribution of either of the two subspecies and range from 6-12 inches per year, versus 12-35 inches per year north and south of this zone. Consequently, there are fewer wetlands—natural or man made—in this zone. The overall population of ducks in this zone in May 1978 is conservatively estimated at 5,000. The phenotypes in this zone are: mallard, mallard X Mexican duck intergrade, and Mexican duck. No evidence of any threats, as required in section 4(a) of the Act, were found as to the continued existence of this mixed population, or a significant segment of it. In fact, the population, at least in the United States is expanding its historical range into southeastern Arizona and western Texas.

(2) Apparently genotypically pure populations of *diazi* are found only in the central highlands of Mexico. A survey in May-June 1978 indicated a population in excess of 50,000 birds was present just prior to the nesting season. These ducks are also adapting to local agricultural practices, as in the United States, by feeding extensively in local farmlands. The ducks in this area, as elsewhere, are very wary and not easily approached. No threats

to the continued existence of this population of ducks, or any significant segment of it, has been documented.

(3) The present information now available indicates that the loss of habitat throughout its range and hybridization with the mallard are no longer valid reasons for listing as was thought in 1967. The effect of natural habitat losses on these ducks has been found to be negligible, since the birds have readily moved into agricultural areas where surface water and food supplies are sometimes more consistently available. The interbreeding of two subspecies of the same species is an expected natural phenomenon. Protection under the definition of "species" in the Act for one phenotype in a geographic segment or population of the same species is not permissible.

After a thorough review and consideration of all information available, the Director has determined that neither the Mexican duck nor its intergrade population with the common mallard is threatened with becoming endangered or in danger of becoming extinct throughout all or a significant portion of its range under any of the five factors described in section 4(a) of the Act, as summarized in the proposed rulemaking (43 FR 13592-13594) and above.

EFFECTS OF THE RULEMAKING

The Mexican-like ducks in the U.S. will remain protected, be more appropriately managed, and receive conservation benefits from the Migratory Bird Treaty Act of 1918. Populations and environmental changes will continue to be closely monitored both in the U.S. and Mexico under the Service's migratory bird program. Benefits, such as State cooperative agreement funding for further research, and protection, such as provided by sections 7 and 9, will no longer be afforded the Mexican duck under the Endangered Species Act of 1973.

EFFECT INTERNATIONALLY

In addition to this action, the Service presently intends, by October 15, 1978, to send to the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora a proposal to remove the Mexican duck from appendix I to that Convention. This proposal is contingent upon comments received to the Service's advance notice of potential rulemaking in the May 3, 1978, FEDERAL REGISTER (43 FR 19176-19190).

NATIONAL ENVIRONMENTAL POLICY ACT

An environmental assessment has been prepared and is filed in the Ser-

vice's Washington Office of Endangered Species. This assessment addresses this action as it involves the Mexican duck and is the basis for the decision that this determination is not a major Federal action which would significantly affect the quality of the human environment within the meaning of section 102(2)(C) of the National Environmental Policy Act of 1969.

The primary author of this rule is Jay M. Sheppard, Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240, 202-343-7814.

REGULATIONS PROMULGATION

Accordingly, § 17.11(i) is amended by deleting the Mexican duck ("*Anas diazi*") from the list of endangered and threatened wildlife.

NOTE.—The Service has determined that this document does not contain a major proposal requiring preparation of an economic impact statement under Executive Order 11949 and OMB Circular A-107.

Dated: July 19, 1978.

LYNN A. GREENWALT,
Director,
Fish and Wildlife Service.

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