Executive Order 12291 and Regulatory Flexibility Act

We are issuing this rule in conformance with Executive Order 12291, and we have determined that it is not a "major rule." Based on information compiled by the Department, we have determined that this rule will have an effect on the economy of less than $100 million; will not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions; and will not cause a significant adverse effect on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

We are changing the regulations to allow the importation of pummelo from Israel, subject to completion of an APHIS-prescribed cold treatment for the Medfly and the ORSM. Embassy officials anticipate that initial annual pummelo shipments from Israel to the United States will average between 200 and 300 metric tons and increase to approximately 1,000 metric tons within several years. The initial retail value of Israeli pummelo shipments will range from approximately $373,600 to $747,000. As Israel increases annual exports, the total retail value of pummelo shipments to the United States will be expected to increase to between $1.5 million and $2.1 million.

In the United States, pummelos represent an extremely small portion of the domestic citrus industry. There are only a handful of commercial pummelo producers in the United States—approximately two to three in Florida, with some additional production occurring in California. Current estimates indicate that there are fewer than 1,000 pummelo trees in the United States. Domestic producers grow pummelo as a small part of large-scale citrus operations, and it is expected that they will continue to grow pummelo at the same rate. Thus domestic production of pummelo is not expected to be affected by increased imports from Israel.

Under these circumstances, the Administrator of the Animal and Plant Health Inspection Service has determined that this action will not have a significant economic impact on a substantial number of small entities.

Paperwork Reduction Act

This rule contains no new information collection or recordkeeping requirements under the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

Executive Order 12372

This program/activity is listed in the Catalog of Federal Domestic Assistance under No. 10.025 and is subject to the provisions of Executive Order 12372, which requires intergovernmental consultation with State and local officials. (See 7 CFR, subpart V.)

List of Subjects in 7 CFR Part 319

Agricultural commodities, Fruit, Imports, Plant diseases, Plant pests, Plants (Agriculture), Quarantine, Transportation.

PART 319—FOREIGN QUARANTINE NOTICES

Accordingly, we are amending 7 CFR part 319 as follows:

1. The authority citation for part 319 continues to read as follows:

Authority: 7 U.S.C. 150dd, 150ee, 150ff, 151–167; 7 CFR 2.17, 2.51, and 371.2(c), unless otherwise noted.

2. In Subpart—Fruits and Vegetables, a new § 319.56–2u is added to read as follows:

§ 319.56–2u Conditions governing the entry of pummelo from Israel.

Pummelo from Israel may be imported into the United States only if cold treated in accordance with § 319.56–2d(a)(2)(i) of this subpart and if all other applicable requirements of this subpart are met. Entry is limited to North Atlantic ports north of and including Baltimore, MD, if treatment is to be completed in the United States. Entry may be through any port if treatment has been completed prior to arrival in the United States.

Done in Washington, DC, this 23rd day of January 1992.

Robert Melland,

Administrator, Animal and Plant Health Inspection Service.

[FR Doc. 92–2014 Filed 1–27–92; 8:45 am]

BILLING CODE 3410–34–M

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

21 CFR Part 176

[Docket No. 89F–0451]

Indirect Food Additives: Paper and Paperboard Components

AGENCY: Food and Drug Administration, HHS.

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is amending the food additive regulations to provide for the safe use of 12-hydroxystearic acid-polyethylene glycol block copolymers as surfactants for dispersions of polyacrylamide retention and drainage aids used in the manufacture of paper and paperboard. This action responds to a petition filed by ICI Americas, Inc.

DATES: Effective January 28, 1992. Written objections and requests for a hearing by February 27, 1992.

ADDRESSES: Written objections to the Dockets Management Branch (HFA–305), Food and Drug Administration, rm. 1–23, 12420 Parklawn Dr., Rockville, MD 20857.

FOR FURTHER INFORMATION CONTACT: Daniel N. Harrison, Food and Drug Administration, Center for Food Safety and Applied Nutrition (HFF–335), 200 C Street SW., Washington, DC 20204, 202–254–9500.

SUPPLEMENTARY INFORMATION: In a notice published in the **Federal Register** of November 17, 1989 (54 FR 47828), FDA announced that a petition (FAP OB4179) had been filed by ICI Americas, Inc., Concord Pike and Murphy Rd., Wilmington, DE 19803, proposing that § 176.170 *Components of paper and paperboard in contact with aqueous and fatty foods* (21 CFR 176.170) be amended to provide for the safe use of polyethylene glycol (MW 1500–4000)/poly (12-hydroxystearic acid) copolymers as surfactants for dispersions of polyacrylamide retention and drainage aids used in the manufacture of paper and paperboard intended to contact aqueous and fatty foods.

The filing notice proposed that the molecular weight of the polyethylene glycol reactant be 1500 to 4000. FDA concludes, however, that it is unnecessary to specify an upper molecular weight range for the polyethylene glycol reactant because the safety of the additive prepared using polyethylene glycol with an average molecular weight of 1500 has been established by this petition and copolymers prepared using polyethylene glycol with higher average molecular weights are generally known, based on agency experience, to be less toxic than lower molecular weight compounds. Therefore, in this regulation, the agency is only specifying 1500 as the minimum molecular weight for the polyethylene glycol components. FDA also has determined that the additive is best described by the nomenclature 12-

hydroxystearic acid-polyethylene glycol block copolymers. The agency is therefore using this name for the additive in the regulation.

FDA, in its evaluation of the safety of 12-hydroxystearic acid-polyethylene glycol block copolymers, reviewed the safety of the additive, including impurities that might be present in the additive. The agency is not aware of any data that show that the additive, 12-hydroxystearic acid-polyethylene glycol block copolymers, is a cancer-causing chemical. However, ethylene oxide and 1,4-dioxane, which could be present as impurities in the polyethylene glycol, have been shown to cause cancer in test animals. Residual amounts of reactants and manufacturing aids, such as ethylene oxide and 1,4-dioxane, are commonly found as contaminants in chemical products, including food additives.

I. Determination of Safety

Under section 409(c)(3)(A) of the Federal Food, Drug, and Cosmetic Act (the act) (21 U.S.C. 348(c)(3)(A)), the so-called "general safety clause," a food additive cannot be approved for a particular use unless a fair evaluation of the data establishes that the additive is safe for that use. The concept of safety embodied in the Food Additives Amendment of 1958 is explained in the legislative history of the provision: "Safety requires proof of a reasonable certainty that no harm will result from the proposed use of an additive. It does not—and cannot—require proof beyond any possible doubt that no harm will result under any conceivable circumstance." (H. Rept. 2284, 85th Cong., 2d Sess. 4 (1958).) This definition of safety has been incorporated into FDA's food additive regulations (21 CFR 170.3(i)). The anticancer or Delaney clause of the Food Additives Amendment (section 409(c)(3)(A) of the act) provides further that no food additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal.

In the past, FDA has often refused to approve a use of an additive that contained or was suspected of containing even minor amounts of a carcinogenic chemical, even though the additive as a whole had not been shown to cause cancer. The agency now believes, however, that developments in scientific technology and experience with risk assessment procedures make it possible for FDA to establish the safety of additives that contain a carcinogenic chemical, but that have not themselves been shown to cause cancer.

In the preamble to the final rule permanently listing D&C Green No. 6, published in the **Federal Register** of April 2, 1982 (47 FR 14138), FDA explained the basis for approving the use of a color additive that had not been shown to cause cancer, even though it contains a carcinogenic constituent. Since that decision, FDA has approved the use of other color additives and food additives on the same basis.

An additive that has not been shown to cause cancer, but that contains a carcinogenic constituent, may properly be evaluated under the general safety clause of the statute using risk assessment procedures to determine whether there is a reasonable certainty that no harm will result from the proposed use of the additive.

The agency's position is supported by *Scott* v. *FDA*, 728 F. 2d 322 (6th Cir. 1984). That case involved a challenge to FDA's decision to approve the use of D&C Green No. 5, which contains a carcinogenic chemical, but has itself not been shown to cause cancer. Relying heavily on the reasoning in the agency's decision to list this color additive, the U.S. Court of Appeals for the Sixth Circuit rejected the challenge to FDA's action and affirmed the listing regulation.

II. Safety of the Petitioned Use

FDA estimates that the petitioned use of 12-hydroxystearic acid-polyethylene glycol block copolymers will result in extremely low levels of exposure to this additive. The agency calculated the estimated daily intake of 12-hydroxystearic acid-polyethylene glycol block copolymers based on several factors, including the migration of the additive under the most severe intended use conditions and the probable concentration of the additive in the daily diet from food-contact articles. The estimated daily intake for the additive is no greater than 39 micrograms per person per day.

FDA does not ordinarily consider chronic testing to be necessary to determine the safety of an additive whose use will result in such low exposure levels (Refs. 1 and 2), and the agency has not required such testing in this case. On the basis of available acute toxicity data and the low level of exposure to the 12-hydroxystearic acid-polyethylene glycol block copolymers, the agency concludes that there is an adequate margin of safety for the proposed use of this additive.

FDA has evaluated the safety of this additive under the general safety clause, using risk assessment procedures to estimate the upper-bound limit of risk presented by the carcinogenic chemicals, ethylene oxide and 1,4-dioxane, that may be present as impurities in the additive. Based on this evaluation, the agency has concluded that the additive is safe under the proposed conditions of use.

The risk assessment procedures that FDA used in this evaluation are similar to the methods that the agency has used to examine the risk associated with the presence of minor carcinogenic impurities in various other food and color additives that contain carcinogenic impurities (see e.g., 49 FR 13018 at 13019, April 2, 1984). This risk evaluation of the carcinogenic impurities has two aspects: (1) Assessment of the worst-case exposure to the impurities from the proposed use of the additive; and (2) extrapolation of the risk observed in the animal bioassays to the conditions of probable exposure to humans.

A. 1,4-Dioxane

Based on the fraction of the daily diet that may be in contact with surfaces containing the additive and assuming that 1,4-dioxane is present in the finished polymer, FDA estimated the hypothetical worst-case exposure to 1,4-dioxane from the use of the additive to be no greater than 19 picograms (pg) per person per day (Ref. 3). The agency used data from a carcinogenesis bioassay conducted by the National Cancer Institute (Ref. 4) to estimate the upper-bound level of lifetime human risk from the proposed use of the additive. The results of the bioassay on 1,4-dioxane indicated that the material was carcinogenic for female rats under the conditions of the study. The test material caused significantly increased incidence of squamous cell carcinomas and hepatocellular tumors in female rats.

The Center for Food Safety and Applied Nutrition's Cancer Assessment Committee (the committee) reviewed this bioassay and other relevant data available in the literature and concluded that the findings of carcinogenicity were supported by this information on 1,4-dioxane. The committee further concluded that the 1,4-dioxane bioassay provided the appropriate basis on which to calculate an estimate of the upper-bound level of lifetime risk from potential exposure to 1,4-dioxane stemming from the proposed use of the additive.

The agency used a quantitative risk assessment procedure (linear proportional model) to extrapolate from the dose used in the animal experiment to the very low doses encountered under the proposed conditions of use. This procedure is not likely to underestimate the actual risk from very low doses and may, in fact, exaggerate it because the

extrapolation models used are designed to estimate the maximum risk consistent with the data. For this reason, the estimate can be used with confidence to determine, to a reasonable certainty, whether any harm will result from the proposed conditions and levels of use of the food additives.

Based on a worst-case exposure of 19 pg per person per day, FDA estimates that the upper-bound limit of individual lifetime risk from the potential exposure to 1,4-dioxane from the use of the subject additive is 6.7×10^{-13}, or 6.7 in 10 trillion (Ref. 5). Because of numerous conservatisms in the exposure estimate, actual lifetime averaged exposure to 1,4-dioxane is expected to be substantially less than the estimated daily intake and, therefore, the calculated upper-bound limit of risk would be less. Thus, the agency concludes that there is a reasonable certainty of no harm from the exposure to 1,4-dioxane that might result from the proposed use of the additive.

B. Ethylene Oxide

Based on the fraction of the daily diet that may be in contact with surfaces containing the additive and assuming that ethylene oxide is present at the limit of detection (Ref. 3), FDA estimated the hypothetical worst-case exposure to ethylene oxide from the use of the additive to be no greater than 7.5 pg per person per day. The agency used data from a carcinogenesis bioassay on ethylene oxide performed by the Institute of Hygiene, University of Mainz, Germany (Ref. 6) to estimate the upper-bound level of lifetime human risk from the proposed use of the additive. The results of the bioassay on ethylene oxide indicated that the material was carcinogenic for female rats under the conditions of the study. The test material caused significantly increased incidence of squamous cell carcinomas in situ of the forestomach and carcinoma in situ of the glandular stomach.

The committee reviewed this bioassay and other relevant data available in the literature and concluded that the findings of carcinogenicity were supported by this information on ethylene oxide. The committee further concluded that the ethylene oxide bioassay provided the appropriate basis on which to calculate an estimate of the upper-bound level of lifetime risk from potential exposure to ethylene oxide stemming from the proposed use of the additive.

Based on a worst-case exposure of 7.5 pg per person per day, FDA estimates that the upper-bound limit of individual lifetime risk from the potential exposure to ethylene oxide from the use of the subject additive is 1.5×10^{-11}, or 1.5 in 100 billion (Ref. 5). Because of numerous conservatisms in the exposure estimate, actual lifetime averaged individual daily exposure to ethylene oxide is expected to be substantially less than the estimated daily intake, and therefore the calculated upper-bound limit of risk would be less. Thus, the agency concludes that there is a reasonable certainty of no harm from the exposure to ethylene oxide that might result from the proposed use of the additive.

III. Need for Specifications and Conclusion on Safety

The agency has also considered whether specifications are necessary to control the amount of 1,4-dioxane and ethylene oxide in the additive. The agency finds that specifications are not necessary for the following reasons: (1) Because of the low levels at which ethylene oxide and 1,4-dioxane may be expected to remain as impurities following production of the additive, the agency would not expect these impurities to become components of food at other than extremely low levels; and (2) the upper-bound limit of lifetime risk from exposure to either of these impurities, even under worst-case assumptions, is very low, 1.5 in 100 billion.

FDA has evaluated the data in the petition and other relevant material and concludes that the proposed food additive use is safe and that the regulations should be amended as set forth below.

In accordance with § 171.1(h) (21 CFR 171.1(h)), the petition and the documents that FDA considered and relied upon in reaching its decision to approve the petition are available for inspection at the Center for Food Safety and Applied Nutrition (address above) by appointment with the information contact person listed above. As provided in 21 CFR 171.1(h), the agency will delete from the documents any materials that are not available for public disclosure before making the documents available for inspection.

IV. Environmental Impact

The agency has carefully considered the potential environmental effects of this action. FDA has concluded that the action will not have a significant impact on the human environment, and that an environmental impact statement is not required. The agency's finding of no significant impact and the evidence supporting that finding, contained in an environmental assessment, may be seen in the Dockets Management Branch (address above) between 9 a.m. and 4 p.m., Monday through Friday.

V. Objections

Any person who will be adversely affected by this regulation may at any time on or before February 27, 1992 file with the Dockets Management Branch (address above) written objections thereto.

Each objection shall be separately numbered, and each numbered objection shall specify with particularity the provisions of the regulation to which objection is made and the grounds for the objection. Each numbered objection on which a hearing is requested shall specifically so state. Failure to request a hearing for any particular objection shall constitute a waiver of the right to a hearing on that objection. Each numbered objection for which a hearing is requested shall include a detailed description and analysis of the specific factual information intended to be presented in support of the objection in the event that a hearing is held. Failure to include such a description and analysis for any particular objection shall constitute a waiver of the right to a hearing on the objection. Three copies of all documents shall be submitted and shall be identified with the docket number found in brackets in the heading of this document. Any objections received in response to the regulation may be seen in the Dockets Management Branch between 9 a.m. and 4 p.m., Monday through Friday.

VI. References

The following references have been placed on display in the Dockets Management Branch (address above) and may be seen by interested persons between 9 a.m. and 4 p.m., Monday through Friday.

1. Carr, G.M., "Carcinogen Testing Programs," in *Food Safety: Where Are We?*, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate, p. 59, July 1979.
2. Kokoski, C.J., "Regulatory Food Additive Toxicology," in *Chemical Safety Regulation and Compliance*, edited by Homburger, F., J.K. Marquis, and S. Karger, New York, NY, pp. 24–33, 1985.
3. Memorandum from the Food and Color Additives Review Section to the Indirect Additives Branch, dated May 18, 1990.
4. "Bioassay of 1,4-dioxane for Possible Carcinogenicity," National Cancer Institute, NCI–CG–TR–80, 1978.
5. Memorandum from the Quantitative Risk Assessment Committee, dated April 11, 1991, Re: FAP OB4179.
6. Dunkelberg, H., "Carcinogenicity of Ethylene Oxide and 1,2-Propylene Oxide upon Intragastric Administration to Rats," *British Journal of Cancer*, 46:924, 1982.

List of Subjects in 21 CFR Part 176

Food additives, Food packaging.

Therefore, under the Federal Food, Drug, and Cosmetic Act and under authority delegated to the Commissioner of Food and Drugs, 21 CFR part 176 is amended as follows:

PART 176—INDIRECT FOOD ADDITIVES: PAPER AND PAPERBOARD COMPONENTS

1. The authority citation for 21 CFR Part 176 continues to read as follows:

Authority: Secs. 201, 402, 406, 409, 706 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321, 342, 346, 348, 376).

2. Section 176.170 is amended in paragraph (a)(5) by alphabetically adding a new entry to read as follows:

§ 176.170 Components of paper and paperboard in contact with aqueous and fatty foods.

* * * * *

(a) * * *

(5) * * *

List of substances	Limitations
* * * * *	
12-Hydroxystearic acid-polyethylene glycol block copolymers (CAS Reg. No. 70142-34-6) produced by the reaction of polyethylene glycol (minimum molecular weight 1500) with 12-hydroxystearic acid.	For use only as a surfactant for dispersions of polyacrylamide retention and drainage aids employed prior to the sheet forming operation in the manufacture of paper and paperboard.
* * * * *	

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Dated: January 21, 1992.

Michael R. Taylor,

Deputy Commissioner for Policy.

[FR Doc. 92-1990 Filed 1-27-92; 8:45 am]

BILLING CODE 4160-01-M

21 CFR Part 177

[Docket No. 89F-0171]

Indirect Food Additives; Poly(Phenyleneterephthalamide) Resins

AGENCY: Food and Drug Administration, HHS.

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is amending the food additive regulations to provide for the safe use of poly(phenyleneterephthalamide) resins and various adjuvants used in the resin production, when used in repeated contact with food. The additive is the subject of a petition filed by E.I. du Pont de Nemours & Co.

DATES: Effective January 28, 1992; written objections and requests for a hearing by February 27, 1992.

ADDRESSES: Written objections to the Dockets Management Branch (HFA-305), Food and Drug Administration, rm. 4-62, 5600 Fishers Lane, Rockville, MD 20857.

FOR FURTHER INFORMATION CONTACT: Julius Smith, Center for Food Safety and Applied Nutrition (HFF-335), Food and Drug Administration, 200 C St. SW., Washington, DC 20204, 202-472-5690.

SUPPLEMENTARY INFORMATION: In a notice published in the **Federal Register** of June 6, 1989 (54 FR 24264), FDA announced that a food additive petition (FAP 8B4101) had been filed by E.I. du Pont de Nemours & Co., 1007 Market St., Wilmington, DE 19898, proposing that the food additive regulations be amended for the safe use of poly(p-phenyleneterephthalamide) resins intended to produce articles for repeated use in the processing and handling of food. The filing notice announced that the processing and finishing of the resins may include the following optional adjuvant substances:

Diundecylphthalate
Mono-and dipotassium salts of lauryl phosphate
o-Phenylphenol
Poly(oxyethylene/oxypropylene)monobutylether
Polyethylene glycol mono(nonylphenyl)ether
Polyvinylmethyl ether
Poly(oxyethylene) sorbitol monolaurate tetraoleate
Poly(oxyethylene) sorbitol hexaoleate
4,4'-Butylidenebis(6-*tert*-butyl-*m*-cresol)

To be consistent with current acceptable nomenclature, polyethylene glycol mono(nonylphenyl)ether has been changed to read poly(oxyethylene) mono(nonylphenyl)ether and poly(p-phenyleneterephthalamide) resin has been changed to read poly(phenyleneterephthalamide) resin.

I. The Additive

FDA has reviewed the safety of these additives, as well as the starting materials. Four of the additives reviewed, poly(oxyethylene/oxypropylene)monobutylether, poly(oxyethylene) mono(nonylphenyl)ether, poly(oxyethylene) sorbitol monolaurate tetraoleate, and poly(oxyethylene) sorbitol hexaoleate may contain minute amounts of ethylene oxide and 1,4-dioxane as impurities from their production. These chemical impurities have been shown to cause cancer in test animals. Residual amounts of reactants and manufacturing aids, such as ethylene oxide and 1,4-dioxane, are commonly found as contaminants in chemical products, including some food additives.

II. Prior Action

Under section 409(c)(3)(A) of the Federal Food, Drug, and Cosmetic Act (the act) (21 U.S.C. 348(c)(3)(A), the so-called "general safety clause" of the statute, a food additive cannot be approved for a particular use unless a fair evaluation of the data establishes that the additive is safe for that use. The concept of safety embodied in the Food Additives Amendment of 1958 is explained in the legislative history of the provision: "Safety requires proof of a reasonable certainty that no harm will result from the proposed use of an additive. It does not—and cannot—require proof beyond any possible doubt that no harm will result under any conceivable circumstances." H. Rept. 2284, 85th Cong., 2d Sess. 4 (1958). This definition of safety has been incorporated into FDA's food additive regulations (21 CFR 170.3(i)). The anticancer, or Delaney clause, of the food additive amendment (section 409(c)(3)(A) of the act) provides further that no food additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal.

In the past, FDA has often refused to approve a use of an additive that contained or was suspected of containing even minor amounts of a carcinogenic chemical, even though the additive as a whole had not been shown to cause cancer. The agency now believes, however, that development in scientific technology and experience with risk assessment procedures make it possible for FDA to establish the safety of additives that contain a carcinogenic chemical, but that have not themselves been shown to cause cancer.

In the preamble to the final rule permanently listing D&C Green No. 6, published in the **Federal Register** of April 2, 1982 (47 FR 14138), FDA explained the basis for approving the use of a color additive that had not been shown to cause cancer, even though it contains a carcinogenic constituent. Since that decision, FDA has approved the use of other color additives and food additives on the same basis. An additive that has not been shown to cause cancer, but that contains a carcinogenic constituent, may properly be evaluated under the general safety clause of the statute using risk assessment procedures to determine whether there is a reasonable certainty that no harm will

result from the proposed use of the additive.

The agency's position is supported by *Scott* v. *FDA*, 728 F. 2d 322 (6th Cir. 1984). That case involved a challenge to FDA's decision to approve the use of D&C Green No. 5, which contains a carcinogenic chemical, but has itself not been shown to cause cancer. Relying heavily on the reasoning in the agency's decision to list this color additive, the United States Court of Appeals for the Sixth Circuit rejected the challenge to FDA's action and affirmed the listing regulation.

III. Safety of Petitioned Use

FDA estimates that the petitioned use of the additive poly(phenylene-terephthalamide) resins and its adjuvants diundecylphthalate, mono- and dipotassium salts of lauryl phosphate, *o*-phenylphenol, poly(oxyethylene/oxypropylene) monobutylether, poly(oxyethylene) mono(nonylphenyl)ether, polyvinyl methyl ether, poly(oxyethylene) sorbitol monolaurate tetraoleate, poly(oxyethylene) sorbitol hexaoleate, and 4,4'-butylidenebis (6-*tert*-butyl-*m*-cresol) will result in extremely low levels of exposure to these substances. FDA does not ordinarily consider chronic testing to be necessary to determine the safety of an additive whose use will result in such low exposure levels (Refs. 1 and 2), and the agency has not required such testing here. Because the additive has not been shown to cause cancer, the anticancer clause does not apply.

FDA has evaluated the safety of these additives under the general safety clause, using risk assessment procedures to estimate the upper bound limit of risk presented by the ethylene oxide and 1,4-dioxane that may be present as impurities in the additives. Based on this evaluation, the agency has concluded that the additive is safe under the proposed conditions of use.

The risk assessment procedures that FDA used in this evaluation are similar to the methods that the agency has used to examine the risk associated with the presence of minor carcinogenic impurities in various other food and color additives that contain carcinogenic impurities. (See, e.g., 49 FR 13018 at 13019, April 2, 1984.) This risk evaluation of the carcinogenic impurities has two aspects: (1) Assessment of the worst-case exposure to the impurities from the proposed use of the additive and (2) extrapolation of the risk observed in the animal bioassays to the conditions of probable exposure to humans.

A. 1,4-Dioxane

Based on the fraction of the daily diet that may be in contact with articles containing the four ethoxylated additives, as well as the level of 1,4-dioxane that may be present in these additives, FDA estimated the hypothetical worst-case exposure to 1,4-dioxane from the use of the ethoxylated additives in repeated-use articles would not exceed 7 nanograms (ng) per person per day (Ref. 3). The agency used data in a carcinogenesis bioassay on 1,4-dioxane, conducted for the National Cancer Institute (Ref. 4), to estimate the upper bound level of lifetime human risk from the proposed use of the additives. The results of the bioassay on 1,4-dioxane demonstrated that the material was carcinogenic for female rats under the conditions of the study. The test material caused significantly increased incidence of squamous cell carcinomas and hepatocellular tumors in female rats.

The Center for Food Safety and Applied Nutrition's Cancer Assessment Committee (the Committee) has reviewed this bioassay and other relevant data available in the literature and concludes that the findings of carcinogenicity were supported by this information on 1,4-dioxane. The Committee further concludes that an estimate of the upper bound level of lifetime risk from potential exposure to 1,4-dioxane stemming from the proposed use of the four ethoxylated additives in repeated-use articles could be calculated from the bioassay.

The agency used a quantitative risk assessment procedure (linear proportional model) to extrapolate from the dose used in the animal experiment to the very low doses encountered under the proposed conditions of use. This procedure is not likely to underestimate the actual risk from very low doses and may, in fact, exaggerate it because the extrapolation models used are designed to estimate the maximum risk consistent with the data. For this reason, the estimate can be used with confidence to determine, to a reasonable certainty, whether any harm will result from the proposed conditions and levels of use of the four ethoxylated additives.

Based on a worst-case exposure of 7 ng per person per day, FDA estimates that the upper bound limit of individual lifetime risk from the potential exposure to 1,4-dioxane from the use of these ethoxylated additives is 2.5×10^{-10}, or less than 2.5 in 10 billion (Ref. 5). Because of numerous conservatisms in the exposure estimate, lifetime average individual exposure to 1,4-dioxane is expected to be substantially less than the estimated daily intake, and therefore, the calculated upper bound limit of risk would be less. Thus, the agency concludes that there is a reasonable certainty of no harm from exposure to 1,4-dioxane that might result from the proposed use of the four ethoxylated additives.

B. Ethylene Oxide

Based on the fraction of the daily diet that may be in contact with articles containing the four ethoxylated additives, as well as the level of ethylene oxide that may be present in the additives, FDA estimated the hypothetical worst-case exposure to ethylene oxide from the use of the ethoxylated additives in repeated-use articles would not exceed 7 ng per person per day (Ref. 3). The agency used data in a carcinogenesis bioassay on ethylene oxide conducted for the Institute of Hygiene, University of Mainz, Germany (Ref. 6), to estimate the upper bound level of lifetime human risk from the proposed use of the additives. The results of the bioassay on ethylene oxide demonstrated that the material was carcinogenic for female rats under the conditions of the study. The test material caused significantly increased incidence of squamous cell carcinomas of the forestomach and carcinoma in situ of the glandular stomach.

The Committee has reviewed this bioassay and other relevant data available in the literature and concludes that the findings of carcinogenicity were supported by this information on ethylene oxide. The Committee further concludes that an estimate of the upper bound level of lifetime risk from potential exposure to ethylene oxide stemming from the proposed use of the four ethoxylated additives in repeated-use articles could be calculated from the bioassay.

The agency used a quantitative risk assessment procedure (linear proportional model) to extrapolate from the dose used in the animal experiment to the very low doses encountered under the proposed conditions of use. As discussed above, this estimate can be used with the confidence to determine, to a reasonable certainty, whether any harm will result from the proposed conditions and levels of use of the ethoxylated additives.

Based on a worst-case exposure of 7 ng per person per day, FDA estimates that the upper bound limit of individual lifetime risk from the potential exposure to ethylene oxide from the use of the four ethoxylated additives is 1.3×10^{-8}, or less than 1.3 in 100 million (Ref. 5). Because of numerous conservatisms in

the exposure estimate, lifetime averaged individual exposure to ethylene oxide is expected to be substantially less than the estimated daily intake, and therefore, the calculated upper bound limit of risk would be less. Thus, the agency concludes that there is a reasonable certainty of no harm from exposure to ethylene oxide that might result from the proposed use of these additives.

C. Need for Specifications

The agency has also considered whether specifications are necessary to control the amounts of 1,4-dioxane and ethylene oxide in the four ethoxylated additives and in the finished poly(phenyleneterephthalamide) resins. The agency finds that specifications are not necessary for the following reasons: (1) Because of the low levels at which 1,4-dioxane and ethylene oxide may be expected to remain as impurities following production of the ethoxylated additives and the finished resin, the agency would not expect these impurities to become components of food at other than extremely low levels; and (2) the upper bound limit of lifetime risk from exposure to these impurities, even under worst-case assumptions, is very low, less than 1.3 in 100 million and 2.5 in 10 billion for ethylene oxide and 1,4-dioxane, respectively.

D. Conclusion of Safety

FDA has evaluated the available toxicity data and the exposure calculations for the intended use of the poly(phenyleneterephthalamide) resin and its adjuvant additives and has determined that they are safe for their proposed use. Accordingly, FDA is amending Part 177 by adding new § 177.1632. In accordance with § 171.1(h) (21 CFR 171.1(h)), the petition and documents that FDA considered and relied upon in reaching its decision to approve the petition are available for inspection at the Center for Food Safety and Applied Nutrition by appointment with the information contact person listed above. As provided in 21 CFR 171.1(h), the agency will delete from the documents any materials that are not available for public disclosure before making the documents available for inspection.

IV. Environmental Impact

The agency has carefully considered the potential environmental effects of this action. FDA has concluded that the action will not have a significant impact on the human environment, and that an environmental impact statement is not required. The agency's finding of no significant impact and the evidence supporting that finding, contained in an environmental assessment, may be seen in the Dockets Management Branch (address above) between 9 a.m. and 4 p.m., Monday through Friday.

V. References

The following references have been placed on display in the Dockets Management Branch (address above) and may be seen by interested persons between 9 a.m. and 4 p.m., Monday through Friday.

1. Carr, G.M., "Carcinogen Testing Programs," in "Food Safety: Where are we?", Committee on Agriculture, Nutrition, and Forestry, United States Senate, p. 59, July 1979.

2. Kokoski, C.J., "Regulatory Food Additive Toxicology," *Chemical Safety Regulation and Compliance*, edited by F. Hombruger and J.K. Marquis, *S. Karger*, New York, NY, pp. 24–33, 1985.

3. Memorandum dated December 30, 1988, from Food And Color Additives Review Section to Indirect Additives Branch "FAP 8B4101—DuPont. Polymer of Terephthaloyl Chloride and *p*-Phenylenediamine," submission of July 7, 1988.

4. "Bioassay of 1,4-Dioxane for Possible Carcinogenicity," National Cancer Institute, NCI–CG–TR–80, 1978.

5. Memorandum dated October 31, 1990, "Report of the Quantitative Risk Assessment Committee."

6. Dunkelber, H., "Carcinogenicity of Ethylene Oxide and 1,2-Propylene Oxide upon Intragastric Administration to Rats," *British Journal of Cancer*, 46:924, 1982.

VI. Objections

Any person who will be adversely affected by this regulation may at any time on or before February 27, 1992 file with the Dockets Management Branch (address above) written objections thereto. Each objection shall be separately numbered, and each numbered objection shall specify with particularity the provisions of the regulation to which objection is made and the grounds for the objection. Each numbered objection on which a hearing is requested shall specifically so state. Failure to request a hearing for any particular objection shall constitute a waiver of the right to a hearing on that objection. Each numbered objection for which a hearing is requested shall include a detailed description and analysis of the specific factual information intended to be presented in support of the objection in the event that a hearing is held. Failure to include such a description and analysis for any particular objection shall constitute a waiver of the right to a hearing on the objection. Three copies of all documents shall be submitted and shall be identified with the docket number found in brackets in the heading of this document. Any objections received in response to the regulation may be seen in the Dockets Management Branch between 9 a.m. and 4 p.m., Monday through Friday.

List of Subjects in 21 CFR Part 177

Food additives, Food packaging.

Therefore, under the Federal Food, Drug, and Cosmetic Act and under authority delegated to the Commissioner of Food and Drugs, 21 CFR part 177 is amended as follows:

PART 177—INDIRECT FOOD ADDITIVES: POLYMERS

1. The authority citation for 21 CFR part 177 continues to read as follows:

Authority: Secs. 201, 402, 409, 706 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321, 342, 348, 376).

2. New § 177.1632 is added to subpart B to read as follows:

§ 177.1632 Poly (phenyleneterephthalamide) resins.

Poly(phenyleneterephthalamide) resins identified in paragraph (a) of this section may be safely used as articles or components of articles intended for repeated contact with food.

(a) *Identity.* For the purpose of this section, the poly(phenylene-terephthalamide) resins (CAS Reg. No. 26125–61–1) are produced by the polymerization of terephthalolyl chloride with *p*-phenylenediamine. The poly(phenyleneterephthalamide) resin fibers and yarns may contain optional adjuvant substances required in their preparation and finishing.

(b) *Optional adjuvant substances.* The poly(phenyleneterephthalamide) resins identified in paragraph (a) of this section may contain the following optional adjuvant substances, subject to any limitation on their use:

(1) Optional adjuvant substances authorized for this use in accordance with § 174.5 of this chapter.

(2) Optional finish components, total weight not to exceed 1 percent by weight of the base polymer, as follows:

List of substances	Limitations
Diundecylphthalate (CAS Reg. No. 3648–20–2).	
Mono- and dipotassium salts of lauryl phosphate (CAS Reg. No. 39322–78–6).	
o-Phenylphenol (CAS Reg. No. 90–43–7).	For use as a fungicide for finish coating materials. Not to exceed 0.01 percent by weight of the base polymer.

List of substances	Limitations
Poly(oxyethylene/oxypropylene)monobutylether (CAS Reg. No. 9038-95-3).	
Poly(oxyethylene) mono(nonyiphenyl)ether (CAS Reg. No. 9019-45-9).	
Polyvinyl methylether (CAS Reg. No. 9003-09-2).	
Poly(oxyethylene) sorbitol monolaurate tetraoleate (CAS Reg. No. 71243-28-2).	
Poly(oxyethylene) sorbitol hexaoleate (CAS Reg. No. 57171-56-9).	
4,4'-Butylidenebis (6-*tert*-butyl-*m*-cresol) (CAS Reg. No. 85-60-9).	For use only as an oxidation inhibitor for finish coating materials. Not to exceed 0.01 percent by weight of the base polymer.

(c) *Specifications.* (1) Poly(phenyleneterephthalamide) resins in the form of continuous filament yarns or fibers that have been scoured in accordance with paragraph (d)(1) of this section, when refluxed in a 50 percent ethanol/water mixture for 24 hours, yields total extractables not exceeding 0.5 percent by weight of the sample.

(2) Poly(phenyleneterephthalamide) resins in the form of pulp, when refluxed in a 50 percent ethanol/water mixture for 24 hours, yields total extractables not exceeding 0.65 percent by weight of the sample.

(d) *Conditions of use.* (1) Poly(phenyleneterephthalamide) resins in the form of continuous filament yarns and fibers may be used as components of articles intended for repeated use in contact with food at temperatures not to exceed 260 °C (500 °F). All items are scoured prior to use by agitation in a water bath containing 0.5 gram/liter of tetrasodium pyrophosphate and 0.5 percent detergent. The items are agitated at 80 °C (180 °F) for 20 minutes, and then subjected to a cold water rinse.

(2) Poly(phenyleneterephthalamide) resins in the form of pulp may be used as gaskets and packing for food processing equipment at temperatures not to exceed 260 °C (500 °F).

Dated: January 21, 1992.

Michael R. Taylor,

Deputy Commissioner for Policy

[FR Doc. 92-1987 Filed 1-27-92; 8:45 am]

BILLING CODE 4160-01-M

21 CFR Part 177

[Docket No. 89F-0462]

Indirect Food Additives: Polymers

AGENCY: Food and Drug Administration, HHS.

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is amending the food additive regulations to provide for the safe use of polyurethane resins derived from the reaction of diphenylmethane diisocyanate with 1,4-butanediol and polytetramethylene ether glycol as rubber articles intended for repeated use in contact with food. This action is in response to a petition filed by The Dow Chemical Co., E. I. du Pont de Nemours & Co., and B. F. Goodrich.

DATES: Effective January 28, 1992; written objections and requests for a hearing by February 27, 1992.

ADDRESSES: Written objections to the Dockets Management Branch (HFA-305), Food and Drug Administration, rm. 1-23, 12420 Parklawn Dr., Rockville, MD 20857.

FOR FURTHER INFORMATION CONTACT: Vir Anand, Center for Food Safety and Applied Nutrition (HFF-335), Food and Drug Administration, 200 C St. SW., Washington, DC 20204, 202-254-9500.

SUPPLEMENTARY INFORMATION: In a notice published in the **Federal Register** of November 17, 1989 (54 FR 47828), FDA announced that a food additive petition (FAP OB4182) had been filed by The Dow Chemical Co., 1803 Bldg., Door 7, Midland, MI 48674, E. I. du Pont de Nemours & Co., 1007 Market St., Wilmington, DE 19898, and B. F. Goodrich, 3925 Embassy Pkwy., Akron, OH 44313, proposing that § 177.2600 *Rubber articles intended for repeated use* (21 CFR 177.2600) of the food additive regulations be amended to provide for the safe use of polyurethane resins derived from the reaction of diphenylmethane diisocyanate with 1,4-butanediol and polytetramethylene ether glycol, as rubber articles intended for repeated use in contact with food.

In its evaluation of the safety of these resins, FDA has reviewed the safety of the proposed additives themselves, their starting materials, and the byproducts of the starting materials used to manufacture the additives. Although polyurethane resins have not been found to cause cancer, some have been found to contain minute amounts of methylenedianiline (MDA) which has been shown to cause cancer in test animals. MDA is produced when diphenylmethane diisocyanate (MDI), a starting material used in the manufacture of polyurethane resins, is reacted with water. Residual amounts of reactants or their reaction products and manufacturing aids are commonly found as contaminants in chemical products, including food additives. Therefore, the agency has evaluated the safety of the use of polyurethane resins that may contain residual amounts of the carcinogenic reaction product MDA and that are intended for repeated use in contact with food.

I. Determination of Safety

Under section 409(c)(3)(A) of the Federal Food, Drug, and Cosmetic Act (the act) (21 U.S.C. 348(c)(3)(A)), the so-called "general safety clause" of the statute, a food additive cannot be approved for a particular use unless a fair evaluation of the data available to FDA establishes that the additive is safe for that use. The concept of safety embodied in the Food Additives Amendment of 1958 is explained in the legislative history of the provision: "Safety requires proof of a reasonable certainty that no harm will result from the proposed use of an additive. It does not—and cannot—require proof beyond any possible doubt that no harm will result under any conceivable circumstance." (H. Rept. 2234, 85th Cong., 2d sess. 4 (1958)). This definition of safety has been incorporated into FDA's food additive regulations (21 CFR 170.3(i)). The anticancer, or Delaney provision of the general safety clause of the Food Additives Amendment of 1958 (section 409(c)(3)(A) of the act) provides further that no food additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal.

In the past, FDA has refused to approve the use of an additive that contained or was suspected of containing even minor amounts of a carcinogenic chemical, even though the additive itself has not been shown to cause cancer. The agency now believes however, that developments in scientific technology and experience with risk assessment procedures make it possible for FDA to establish the safety of additives that contain carcinogenic chemicals but that have not themselves been shown to cause cancer.

In the preamble to the final rule permanently listing D&C Green No. 6, published in the **Federal Register** of April 2, 1982 (47 FR 14138), FDA explained the basis for approving the use of a color additive that had not been shown to cause cancer, even though it contains a carcinogenic impurity. Since that decision, FDA has approved the use