81. On page 40643, first column, in § 268.50(a)(3), "may store" should read "stores".

82. On page 40643, first column, in § 268.50(d), "or a nationwide variance contained in Subpart C of this part" is inserted following "petition under § 268.6" and before "or an approved."

PART 268, APPENDIX I— [CORRECTED]

83. On page 40645, in the equation below Step 7.2.3, the colon after "Percent" but before "dry solids" should be deleted.

84. On page 40645, third column, in the last line of Step 7.4.1, "of" should read "or".

85. On page 40646, first column, in the second line of Step 8.5, "110" should read "100".

86. On page 40646, second column, in the seventh line of the note to Step 8.8, "is" should be inserted after "device" but before "defined".

87. On page 40647, second column, in the third line of Step 9.2, "estraction" should read "extraction".

88. On page 40648, the equation below Step 9.11 should read as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \%\ \text{solids (Step 7.1)} \times \text{weight of waste filtered (Step 8.4 or 9.8)}}{100}$$

§ 271.1 [Corrected]

89. On page 40653, third column, in § 271.1(j), insert "November 7, 1986" in the first column of Table 1 and revise the third column of Table 1 to read "51 FR 40572."

90. On page 40654, first column, in § 271.1(j), revise the fourth column of Table 2 to read "November 7, 1986, 51 FR 40572."

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BILLING CODE 6560-50-M

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40 CFR Parts 704, 795 and 799

[OPTS-42076A; FRL-3213-5]

Anthraquinone; Final Reporting and Recordkeeping Requirements and Test Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is issuing a final rule, under section 4 of the Toxic Substances Control Act (TSCA), requiring manufacturers and processors of 9,10-anthraquinone (CAS No. 84-65-1), hereinafter anthraquinone, to perform testing for water solubility, bioconcentration, sediment toxicity to benthic organisms, and acute toxicity to aquatic organisms. The Agency is also requiring annual reporting, under section 8 of TSCA, by manufacturers (including importers) of anthraquinone of the volume of this substance manufactured or imported during their latest corporate fiscal year. The rule precludes duplicative reporting during those years that industry must report under the Inventory Update Rule. Testing for biodegradation and chronic toxicity to aquatic organisms will be required if the acute toxicity, sediment toxicity, or bioconcentration test results suggest a hazard potential and the annual production/importation level reaches or exceeds 3 million pounds (lb). This rule requires the same testing as EPA's proposed rule on anthraquinone.

DATES: In accordance with 40 CFR 23.5, this rule will be promulgated for purposes of judicial review at 1 p.m. eastern ("daylight" or "standard," as appropriate) time on June 18, 1987. These regulations will become effective on July 20, 1987. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 20, 1987.

FOR FURTHER INFORMATION CONTACT: Edwin A. Klein, Director, TSCA Assistance Office (TS-799), Office of Toxic Substances, Rm. E-543, 401 M St., SW., Washington, DC 20460, (202-554-1404).

SUPPLEMENTARY INFORMATION: EPA is issuing a final test rule under section 4(a) of TSCA to require chemical fate and environmental effects testing of anthraquinone. Under section 8(a) EPA will also require manufacturers (including importers) to report annually to EPA the volume of anthraquinone manufactured or imported during their latest corporate fiscal year.

I. Introduction

A. Test Rule Development Under TSCA

This notice is part of the overall implementation of section 4 of TSCA (Pub. L. 94-469, 90 Stat. 2003 *et seq.*, 15 U.S.C. 2601 *et seq.*), which contains authority for EPA to require the development of data relevant to assessing the risk to health and the environment posed by exposure to particular chemical substances or mixtures.

Under section 4(a)(1) of TSCA, EPA must require testing of a chemical substance to develop health or environmental data if the Administrator finds that:

(A)(i) the manufacture, distribution in commerce, processing, use, or disposal of a chemical substance or mixture, or that any combination of such activities, may present an unreasonable risk of injury to health or the environment,

(ii) there are insufficient data and experience upon which the effects of such manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture or of any combination of such activities on health or the environment can reasonably be determined or predicted, and

(iii) testing of such substance or mixture with respect to such effects is necessary to develop such data; or

(B)(i) a chemical substance or mixture is or will be produced in substantial quantities, and (I) it enters or may reasonably be anticipated to enter the environment in substantial quantities or (II) there is or may be significant or substantial human exposure to such substance or mixture,

(ii) there are insufficient data and experience upon which the effects of the manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture or of any combination of such activities on health or the environment can reasonably be determined or predicted, and

(iii) testing of such substance or mixture with respect to such effects is necessary to develop such data.

For a more complete understanding of the statutory section 4 findings, the reader is directed to the Agency's first proposed test rule package published in the Federal Register of July 18, 1980 (45 FR 48510), for an in-depth discussion of the general issues applicable to this action.

B. Regulatory History

As published in the Federal Register of November 29, 1984 (49 FR 46931), the Interagency Testing Committee (ITC) designated anthraquinone for priority testing consideration and recommended chemical fate testing, including water solubility and biodegradation, and ecological effects testing, including acute toxicity to fish, aquatic invertebrates, and algae, and chronic toxicity to aquatic organisms, conditional upon results of acute tests. The Agency evaluated the ITC recommendation and on April 23, 1985 held a public meeting to announce its preliminary testing decision. Subsequent to the public meeting, Mobay Chemical Corp. submitted confidential business

information (CBI) data on the concentration of anthraquinone in waste water from the alkaline pulping process (Ref. 25). These data were considered in the drafting of the proposed test rule.

The Agency responded to the ITC's recommendations for anthraquinone by issuing, in the **Federal Register** of November 6, 1985 (50 FR 46090), a proposed test rule (40 CFR 799.500) and a proposed reporting and recordkeeping requirement (40 CFR 704.69, which is being redesignated as 40 CFR 704.30 in the final rule) for production and importation data. Based on section 4(a)(1)(B) of TSCA, EPA proposed tiered testing, with the first tier including water solubility; acute toxicity to chinook salmon or coho salmon, bluegill, and rainbow trout; acute toxicity to the invertebrates *Daphnia magna* or *D. pulex* and oyster; marine sediment toxicity to the amphipod, *Rhepoxynius abronius*; and oyster bioconcentration. Under section 8 of TSCA, EPA proposed that manufacturers (including importers) of anthraquinone be required to submit an annual report to EPA stating the volume of anthraquinone manufactured or imported during their latest corporate fiscal year. Also proposed under section 4(a) of TSCA was a second tier of testing which would be triggered if the results of Tier I tests indicated a hazard potential and the reported production/importation volume reached or exceeded 3 million lb per year. The second tier of tests included chronic toxicity in the most sensitive fish, chronic toxicity in *Daphnia*, biodegradability in sludge systems, and biodegradation rate.

The proposed rule contained a chemical profile of anthraquinone, a discussion of EPA's TSCA section 4(a) findings, and a description of the test substance to be used. The proposed rule also specified the test standards to be used and the reporting requirements.

II. Public Comment

Comments were submitted to the Agency by CIL, Inc., on September 19, 1985 (Ref. 1) and February 26, 1986 (Ref. 2). The first set of comments responded to materials discussed (Ref. 3) at the public meeting held on April 23, 1985 to announce the Agency's preliminary testing decision. Several of these comments are no longer relevant since the proposed testing reflected the Agency's consideration of information submitted by industry subsequent to this meeting. The comments which are still relevant to the proposed rule are addressed below. The second set of comments (Ref. 2) were submitted in response to the proposed rule and are also addressed below.

A. Increased Use of Anthraquinone

CIL commented that the increased use of anthraquinone in the pulping industry is unlikely to surpass 1.5 to 2.0 million lb for many years. CIL reasoned that there is an economic incentive to use anthraquinone primarily outside the U.S. where increased pulping capacity is needed (by improving efficiency), but capital outlay cannot be justified (Ref. 1). EPA has reexamined the use of anthraquinone in pulping operations and its original estimate that anthraquinone use could be expected to rise to 7 million lb per year. EPA now concludes that the current use level of 1 to 2 million lb per year is not likely to rise significantly in the near term (Ref. 11). Although EPA's estimate of anthraquinone's future use is not as optimistic, the Agency will still rely on a production/import trigger for second tier testing of 3 million lb per year. This level was orginally selected because environmental release was expected to become significant at this level without the cost of conditional testing posing a significant adverse economic impact on the market.

B. Biodegradation

CIL commented that anthraquinone is easily and completely biodegraded (Ref. 1), citing studies by Weston (Ref. 4) and Mobay (Ref. 5). According to CIL, the Weston study showed anthraquinone at 500 milligrams per liter (mg/L) to have a half life of 5 days with either acclimated or unacclimated seed organisms in an activated sludge biodegradation study under aerobic conditions, while the Mobay study, at an anthraquinone concentration of 2.4 mg/L, indicated a half-life in excess of 20 days (using an acclimated seed).

EPA does not find these studies adequate because they were not actually done in activated sludge biodegradation systems. Rather, inocula were provided from acclimated and unacclimated semi-continuous activated sludge (SCAS) systems for biochemical oxygen demand (BOD) tests. The BOD test is not an adequate test for determining removability in waste water treatment. It is a screening test designed to determine whether a compound is readily degraded. The BOD test is of greatest value for quantitative risk assessment if the test results indicate very rapid biodegradation or no biodegradation. When the results are at neither extreme, they are less reliable, and more sophisticated testing is needed.

The Weston study found a BOD after 5 days of 61 and 45 percent of theoretical oxygen demand in acclimated and unacclimated cultures, respectively, while Mobay found a BOD after 20 days of 40 percent and 15 percent in acclimated and unacclimated cultures. Although the Weston results indicate biodegradation could be rapid, the lack of a significant difference between the results of the acclimated versus unacclimated cultures is a result fully consistent with the BOD being exerted by the dispersant rather than anthraquinone. As a result, it is difficult to draw meaningful conclusions about anthraquinone's degradability from this study. Also, the concentration of 500 mg/L exceeds the anticipated water solubility range of anthraquinone, and although the precise effect that the physical state of an organic chemical may have on these tests is unknown, it is best to conduct them at or below the solubility limit at an environmentally relevant concentration.

The BOD tests by Mobay indicate biodegradation occurs more slowly, and the conclusions in the Mobay report regarding anthraquinone's biodegradability are reasonable. However, Mobay's findings notwithstanding, there is still a need for testing of anthraquinone at environmentally relevant concentrations to provide biodegradation rates in environmentally relevant media, i.e., surface waters and waste water treatment systems. BOD tests do not provide these data, regardless of how carefully they are done.

In a final comment on biodegradation, CIL remarked that in anaerobic digestion tests, there was no impact on the anaerobic digestion process by anthraquinone when present at levels expected to be released to the environment (Ref. 1). The Agency agrees that anthraquinone's adverse effect on anaerobic digestion does not occur unless concentrations are 10 ppm or greater (Ref. 6).

C. Aquatic Toxicity

CIL commented that the study by MacPhee and Ruelle (Ref. 7), which indicated that anthraquinone was moderately toxic, "did not use a protocol which meets the standards for rational scientific decision," casting doubt on the validity of the results. CIL was concerned specifically with excessive fish loading, oxygen depletion, and the use of acetone to maintain chemicals in solution. This screening study tested 1,888 chemicals, and the results spanned the full range of response from nontoxic to very toxic using uniform test conditions with the test chemical as the variable. EPA realizes that as a screening study the MacPhee and Ruelle study does not

provide definitive acute toxicity data. The study is useful, however, in indicating compounds that might be toxic. In the case of anthraquinone, the study indicated moderate toxicity with a 13-hour LC_{100} of 10 ppm. The species used in this study—coho salmon, chinook salmon, and squawfish—have not been tested with anthraquinone in other studies to refute these findings. Therefore, as proposed in the November 6, 1985 notice, EPA is now requiring acute toxicity tests in either coho salmon or chinook salmon to determine if anthraquinone is indeed toxic to these species.

CIL also commented that tests carried out by the Pulp and Paper Research Institute of Canada (Ref. 8) using rainbow trout showed that the addition of anthraquinone to Kraft liquors had little effect on the latter's toxicity. These tests were reviewed by EPA, but the lack of measured concentrations of anthraquinone or a description of the methodology made it difficult to determine if these tests were conducted under environmentally relevant conditions.

The study of rainbow trout which EPA will require by this rule will determine the toxicity of anthraquinone itself under defined conditions to allow EPA to fully evaluate its toxicity.

D. Water Solubility

CIL submitted a paper by Geake and Lemon (Ref. 9) which indicated a solubility limit for anthraquinone of 0.624 mg/L. EPA reviewed this paper and is not confident that 0.624 mg/L represents the true water solubility for the following reasons: (1) Concentration-time studies were not done to determine if true equilibrium saturation had been reached; (2) excess anthraquinone in the form of colloids cannot be removed by filtration but only by centrifugation. The presence of colloids would cause the solubility limit to appear to be greater than its true value; (3) the colorimetric procedure used to measure concentration had an accuracy of only ±20 percent; a more sensitive analytical procedure is needed to measure the concentration of anthraquinone in water in the range of 1 ppm or less; and (4) it appears that the temperature at which the solubility was determined was 50 °C; it should be determined at 12 °C and 22 °C, temperatures which more closely approximate the temperatures of cold and warm water bodies in the environment. Therefore, as proposed in the November 6, 1985 notice, EPA is requiring that water solubility of anthraquinone be determined by the generator column method (40 CFR 796.1860). This method eliminates the problems encountered by Geake and Lemon, i.e., in the generator column method, equilibrium is achieved rapidly, the effects of colloids are eliminated, and the solubility limit can be measured precisely down to the part per billion (ppb) range.

CIL also commented that the determination of the precise solubility level will not negate the acceptability of previous biodegradation and toxicity results from tests conducted above the solubility limit, since organisms in these tests were exposed to anthraquinone at the saturation or solubility limit. EPA, however, believes that the physical state of an organic chemical may have an effect on test results when the chemical is added to levels in excess of its solubility. As an example, the authors of a study, in which anthraquinone was used at concentrations exceeding its solubility, speculated that the observed mortality was due to undissolved anthraquinone clogging the gills of the fish rather than a toxic chemical action (Ref. 21). Therefore, EPA is requiring that tests be conducted at environmentally relevant concentrations which EPA has projected to be below the solubility limit.

CIL also commented that close derivatives, precursors or analogues of anthraquinone, such as tetrahydroanthraquinone (THAQ), anthrahydroquinone (AHQ), and 1,4-dihydro-9,10-dihydroxyanthracene (DDA), can also be used in the pulping process with effects equivalent to those of anthraquinone and with similar environmental fates (Ref. 2). CIL was concerned that the burden of conducting the proposed testing would not be equitably distributed. In the use of THAQ, AHQ, and DDA in pulping, some anthraquinone is produced, but any release to the environment would most probably be a mixture of anthraquinone, THAQ, AHQ, and DDA (Ref. 22). Such a mixture would not have the toxicity of anthraquinone alone, especially since the toxicity of THAQ, AHQ, and DDA may differ from anthraquinone due to their greater solubility in water. Also, the Agency has no evidence that THAQ, AHQ, and DDA are currently being used in the U.S., even though they can be substituted for anthraquinone in the pulping process and may be more efficacious due to their greater solubility (Ref. 22).

For the above reasons, the Agency has decided not to make the manufacturers of THAQ, AHQ, and DDA subject to this rule at this time; the Agency plans to further evaluate the extent of use of alternatives and the need for their testing.

III. Final Test Rule for Anthraquinone

A. Findings

EPA is basing its final testing requirements for anthraquinone on the authority of section 4(a)(1)(B) of TSCA. Existing data indicate that anthraquinone is or will be imported in substantial quantities and that substantial environmental release may be reasonably anticipated to occur. Annual imports of anthraquinone are 813,000 lb (Ref. 10) and could rise in the future. Discharge data from one wood pulping plant using anthraquinone as a catalyst show that the plant is currently releasing effluents with anthraquinone concentrations in the upper part per billion to lower part per million range. There are approximately 100 pulping plants in the U.S. that could potentially use anthraquinone in their processing (Ref. 12). If this use of anthraquinone increases, such releases could become widespread.

EPA also finds that the data now available are insufficient to reasonably determine or predict the chemical fate and environmental effects of releases from the use, processing, and disposal of anthraquinone.

There is also no acceptable measured value for anthraquinone's solubility in water, and the reported values of 0.05 mg/L (Ref. 13) and 0.5 mg/L (Ref. 4) are not supported by data. A third value for water solubility is EPA's estimate of 0.3 mg/L (Ref. 14). The Agency finds that the water solubility of anthraquinone must be determined to enable the proper design of other studies.

The Agency finds that the biodegradation studies submitted by CIL, Inc. (Ref. 4) and Mobay Chemical Corp. (Ref. 5) are, as BOD tests, not adequate for determining removability in waste water treatment. Additionally, these tests were conducted at concentrations exceeding the anticipated water solubility range of anthraquinone, and presented a half-life range (5 days and greater than 20 days) too broad to reasonably predict anthraquinone's persistence in the environment. This broad range is particularly unsatisfactory since the typical waste treatment residence times for the dye and pulp industries are 6 and 8 days, respectively (Refs. 15 and 16). Also, as stated in Unit II. of this preamble, the BOD in the Weston study may have been exerted by the dispersant rather than anthraquinone. The Agency also finds that the submitted studies are not necessarily relevant to assessing biodegradation by microbial populations in natural waters, which possess a different array of

microbial communities and physical and chemical characteristics than waste treatment systems.

With regard to the release and chemical fate information presented in the proposed rule, EPA expects that potential exposure to anthraquinone will be greatest for fish, aquatic invertebrates, and benthic organisms. EPA finds that there are no toxicity or bioconcentration data on benthic organisms and no chronic effects data on fish and aquatic invertebrates.

After reviewing and evaluating the existing acute toxicity data for aquatic organisms experimentally exposed to anthraquinone, EPA has determined that additional data are necessary to determine whether salmonids are sensitive as suggested by the MacPhee and Ruelle study (Ref. 7). EPA also finds that additional acute toxicity studies of fish and aquatic invertebrates are necessary since the existing studies were done at concentrations exceeding the anticipated water solubility range of anthraquinone.

EPA finds that sufficient data are available from the study done by Chillingworth (Ref. 17) to reasonably predict anthraquinone's toxicity to algae.

Finally, EPA finds that testing is necessary to develop the chemical fate and environmental effects data described above. EPA believes that the data resulting from this testing will be relevant to a determination as to whether the manufacture, processing, or use of anthraquinone does or does not present an unreasonable risk of injury to the environment.

B. Required Testing and Test Standards

On the basis of these findings, the Agency is requiring that chemical fate and environmental effects testing be conducted on anthraquinone in accordance with EPA's TSCA Good Laboratory Practice standards in 40 CFR Part 792 and specific test guidelines set forth in Title 40 of the Code of Federal Regulations or other published test methods as enumerated below. Test methods under Parts 796 and 797 were published in the **Federal Register** of September 27, 1985 (50 FR 39252); proposed revisions were published in the **Federal Register** of January 14, 1986 (51 FR 1522) and final revisions were published in the **Federal Register** of May 20, 1987 (52 FR 19056).

In view of the prospect for a growing market for anthraquinone owing to its use in the pulping industry and the projected economic impact (see section IV. of this preamble, Economic Analysis of Test Rule) of the full set of aquatic tests EPA believes would be necessary to adequately assess the environmental risks of anthraquinone, the Agency is requiring that testing be conducted in two tiers. By tiering testing, EPA expects to obtain limited data now from the first tier to better assess the potential for expanded releases of anthraquinone to pose significant risks. Should the production or importation of anthraquinone expand substantially and the results of the first tier of testing meet the specified triggers, the second tier of testing will provide the more complete data needed to evaluate the possible risks associated with substantially larger aquatic releases of the chemical.

EPA is requiring that the first tier testing of anthraquinone be conducted now to determine (1) the water solubility to properly design the subsequent required tests, using the TSCA guideline entitled "Water Solubility, Generator Column Method" as specified in § 796.1860; the solubility shall be determined at 12 °C and 22 °C as allowed under § 796.1860(b)(3) because of the temperature requirements for fish acute toxicity tests of cold and warm water species under § 797.1400(d)(3)(iii); (2) the acute toxicity to chinook salmon, *Oncorhynchus tshawytscha*, or coho salmon, *Oncorhynchus kisutch* (cold water species); bluegill, *Lepomis macrochirus* (warm water species); and rainbow trout, *Salmo gairdneri* (cold water species), using the TSCA guideline entitled "Fish acute toxicity test" as specified in § 797.1400 as modified; (3) the acute toxicity to the invertebrates *Daphnia magna* or *D. pulex*, and oyster, *Crassostrea virginica*, using the TSCA guidelines entitled "Daphnid acute toxicity test" as specified in § 797.1300 and as modified and "Oyster acute toxicity test" as specified in § 797.1800 as modified; (4) the sediment toxicity to either the marine amphipod, *Rhepoxynius abronius*, according to the method of R.C. Swartz et al., "Phoxocephalid Amphipod Bioassay for Marine Sediment Toxicity", published in the American Society for Testing and Materials Special Technical Publication 854 (ASTM STP 854), R. D. Caldwell et al. (eds.) (Ref. 18) or the freshwater midge, *Chironomus tetans*, according to the method of W.J. Adams et al., "Aquatic safety assessments of chemicals sorbed to sediments", also published in ASTM STP 854 (Ref. 23); and (5) bioconcentration in oyster, *Crassostrea virginica*, using the TSCA guideline entitled "Oyster bioconcentration test" as specified in § 797.1830 as modified.

EPA is allowing industry a choice of either of the two above-referenced sediment toxicity tests because the Agency wishes to allow the manufacturers of anthraquinone the opportunity to conduct this testing using the species and methods required in other section 4 test rules concurrently under development or published. It also allows industry to select a species that is more representative of the streams and waters receiving effluents from pulping plants and a species that may be more available for testing.

In order to evaluate the potential hazard of the median lethal concentrations (LC50's) generated by the Tier I tests, EPA is requiring that the LC50's be compared to the predicted environmental concentrations (PEC's) for anthraquinone in water and sediment, i.e., 5 ppb and 0.1 ppm respectively, which have been determined from reported discharge levels (see the proposed rule).

EPA is also requiring that a second tier of tests shall be conducted if two triggers are met—a hazard trigger and a production/import level trigger. The hazard trigger will be met if one or more of the median lethal concentrations (LC50's) generated by the Tier I tests are less than 100 times the predicted environmental concentrations. The production/import level trigger will be met when annual production/import levels reach 3 million lb. EPA will require annual reporting under section 8(a) to monitor the production/import levels of anthraquinone, and will notify industry if the production/import trigger is met.

If both triggers are met, EPA is requiring that selection of the Tier II tests be based on the results of the Tier I tests as follows. If the most sensitive fish, i.e., the fish with the lowest LC50 as determined by the above-required acute toxicity tests, has an LC50 less than 100 times the predicted environmental concentration (PEC) for water (i.e., less than 500 ppb), testing of anthraquinone shall be conducted to determine the chronic toxicity to the most sensitive fish, using the TSCA guideline entitled "Fish early life stage toxicity test" as specified in § 797.1600 as modified. If the daphnid has a median effective concentration (EC50) as determined by the above required acute toxicity test which is less than 100 times the PEC for water (i.e., less than 500 ppb), testing of anthraquinone shall be conducted to determine the chronic toxicity to daphnids, using the TSCA guideline entitled "Daphnid chronic toxicity test" as specified in § 797.1330 as modified.

The required partial life cycle testing of either *Rhepoxynius* or *Chironomus* will provide data on sensitive life stages of benthic invertebrates. Current state of

the art in benthic invertebrate testing has not progressed to allow full chronic testing.

If the LC50 for the most sensitive fish, or the EC50 for the daphnid or oyster, is less than 100 times the PEC in water (i.e., less than 500 ppb), or if the LC50 for *Rhepoxynius* or *Chironomus* in the sediment toxicity test is less than 100 times the PEC in sediment (i.e., less than 10 ppm), or if the oyster bioconcentration factor is greater than 3,000, then EPA is requiring that testing of anthraquinone shall be conducted to determine (1) the biodegradability in activated sludge systems, using the test method entitled "Inherent biodegradability: Modified SCAS (semi-continuous activitated sludge) test for chemical substances that are water insoluble or water insoluble and volatile" as specified in § 795.45 (originally proposed under § 796.3341 (see 50 FR 46793; Nov. 13, 1985)] and [2] biodegradation rate using the protocol described in a study by Bourquin et al. (Ref. 19).

EPA chose to trigger second tier testing with an increase in production/import level for two reasons. First, as the use of anthraquinone increases, the Agency's concerns for environmental release and the potential for unreasonable risk to the environment increase. Under such conditions, the need for further testing to fully characterize the hazard potential and chemical fate of anthraquinone becomes essential. If the data developed in the first tier of testing do not meet at least one of the hazard triggers described above, there would be no potential to trigger further testing and thus no need for continued section 8(a) reporting; EPA then would remove the section 8(a) reporting requirement and publish a notice of such action in the Federal Register.

However, if these data suggest concern and if anthraquinone use continued to increase to 3 million lb per year, the second tier of testing is considered essential. EPA also chose a production/import level of 3 million lb per year because it represents substantial market growth of the chemical over current levels and a level at which EPA's analysis indicates the second-tier tests will not cause an adverse economic impact (See section IV. of this preamble, Economic Analysis of Test Rule). The section 8(a) reports will be the means to determine when the 3-million lb trigger is met.

The Agency is requiring that the above-referenced TSCA Chemical Fate and Environmental Effects Test Guidelines as revised elsewhere in this issue of the Federal Register and other cited methods be considered the test standards for the purposes of the required tests for anthraquinone. The proposed test rule for anthraquinone specified that the revisions to the guidelines proposed in the January 14, 1986 issue of the Federal Register (51 FR 1522) would be applicable to this rule. EPA proposed revisions to the TSCA test guidelines to provide more explicit guidance on the necessary minimum elements for each study and to avoid repetitive chemical-by-chemical changes to the guidelines in their adoption as test standards for chemical-specific test rules. The guideline revisions published in the Federal Register of May 20, 1987 (52 FR 19056), for tests included in this final rule are adopted in the test standards for the testing of anthraquinone. EPA has responded to comments concerning these guidelines in the record for that rulemaking (Ref. 24). These final revisions apply to the test standards for anthraquinone. The TSCA guidelines for chemical fate and aquatic toxicity testing specify generally accepted minimal conditions for determining chemical fate and aquatic animal toxicities for substances like anthraquinone to which aquatic life is expected to be exposed. The Agency believes that the conduct of the required studies in accordance with these test standards is necessary to assure that the results are reliable and adequate.

The Agency's review of the guidelines, which occurs on a yearly basis as described in the Federal Register of September 22, 1982 (47 FR 41857), has found no reason to conclude that these guidelines generally need to be modified significantly. However, several chemical-specific modifications were deemed necessary to ensure that the test concentrations are environmentally relevant and are adequately maintained throughout the duration of the test. These modifications are specified in § 799.5089, which follows this preamble.

Additionally, the American Society for Testing and Materials (ASTM) guidelines (Refs. 18 and 23) and the test procedures employed by Bourquin et al. (Ref. 19) specify, in EPA's judgment, minimum test conditions and practices for acceptable investigations of anthraquinone's toxicity in sediment to marine amphipod and freshwater midge, and rate of biodegradation. Although the Agency has not issued TSCA testing guidelines for benthic invertebrates or biodegradation rate, the testing procedures found in these references reflect the current state of the art for such testing and are being required for testing anthraquinone's toxicity to benthic invertebrates and biodegradation rate.

C. Test Substance

EPA is requiring that 9,10-anthraquinone of at least 99 percent purity be used as the test substance. Anthraquinone of this purity is commercially available at nominal cost (Ref. 20). EPA has specified a highly pure substance for testing because the Agency is interested in evaluating the effects attributable to anthraquinone itself.

D. Persons Subject to the Rule

1. *Persons required to test.* Section 4(b)(3)(B) of TSCA specifies that the activities for which the EPA makes section 4(a) findings (manufacture, processing, distribution, use, and/or disposal) determine who bears the responsibility for testing. Manufacturers are required to test if the findings are based on manufacturing ("manufacture" is defined in section 3(7) of TSCA to include "import"). Processors are required to test if the findings are based on processing. Both manufacturers and processors are required to test if the exposures giving rise to the potential risk occur during use, distribution, or disposal.

Because EPA has found that existing data are inadequate to assess the chemical fate and environmental toxicity of anthraquinone entering the environment as a result of the processing, use, and disposal of this chemical, EPA is requiring that persons who manufacture and/or process, or who intend to manufacture and/or process, anthraquinone at any time from the effective date of this final test rule to the end of the reimbursement period are subject to the testing requirements contained in this final rule. The end of the reimbursement period will be 5 years after the last final report is submitted or an amount of time equal to that which was required to develop data, if more than 5 years, after the submission of the last final report required under the test rule.

Because TSCA contains provisions to avoid duplicative testing, not every person subject to this rule must individually conduct testing. Section 4(b)(3)(A) of TSCA provides that EPA may permit two or more manufacturers or processors who are subject to the rule to designate one such person or a qualified third person to conduct the tests and submit data on their behalf. Section 4(c) provides that any person required to test may apply to EPA for an exemption from the requirement. EPA promulgated procedures for applying for TSCA section 4(c) exemptions in 40 CFR Part 790.

Manufacturers (including importers) subject to this rule are required to submit either a letter of intent to perform testing or an exemption application within 30 days after the effective date of the final test rule. The required procedures for submitting such letters and applications are described in 40 CFR Part 790.

Processors subject to this rule, unless they are also manufacturers, will not be required to submit letters of intent or exemption applications, or to conduct testing, unless manufacturers fail to submit notices of intent to test or later fail to sponsor the required tests. The Agency expects that the manufacturers will pass an appropriate portion of the costs of testing on to processors through the pricing of their products or reimbursement mechanism. If manufacturers perform all the required tests, processors will be granted exemptions automatically. If manufacturers fail to submit notices of intent to test or fail to sponsor all the required tests, the Agency will publish a separate notice in the **Federal Register** to notify processors to respond. This procedure is described in 40 CFR Part 790.

EPA is not requiring the submission of equivalence data as a condition for exemption from the required testing for anthraquinone. As noted in Unit III.C. above, EPA is interested in evaluating the effects attributable to anthraquinone and has specified a relatively pure substance for testing.

Manufacturers and processors subject to this test rule must comply with the test rule development and exemption procedures in 40 CFR Part 790 for single-phase rulemaking.

2. *Persons required to submit production and import information.* Persons (other than small manufacturers and importers) who manufacture or import anthraquinone after the effective date of this final rule will be required to submit section 8(a) data under this rule. Although TSCA section 8(a)(3)(A)(ii) would allow EPA to require reporting by small manufacturers and small importers of anthraquinone (because anthraquinone is concurrently being made subject to a section 4 rule), EPA has determined that such reporting is not necessary to achieve the purposes of this rule.

E. Reporting Requirements

1. *Under section 4.* EPA is requiring that all data developed under this rule be reported in accordance with its TSCA Good Laboratory Practice (GLP) standards, which appear in 40 CFR Part 792.

In accordance with 40 CFR Part 790 under single-phase rulemaking procedures, test sponsors are required to submit individual study plans within 45 days before initiation of each study.

Subsequent to the issuance of the proposed test rule for anthraquinone, the Agency decided that interim reports for the testing required for substances under section 4 of TSCA should be submitted at 6-month intervals, rather than at 3-month intervals, which will be sufficient to keep EPA informed of the current status of required testing and of any difficulties which the testing facility may encounter during the course of testing. In addition, this change will lessen the reporting burden on test sponsors. Accordingly, the final reporting requirements for the testing required for anthraquinone reflect a requirement for 6-month, rather than 3-month, interim testing reports.

EPA is required by TSCA section 4(b)(1)(C) to specify the time period during which persons subject to a test rule must submit test data. Specific reporting requirements for each of the final test standards follow:

a. The water solubility and acute toxicity tests shall be completed and the final results submitted to EPA within 1 year of the effective date of the final test rule. An interim progress report shall be provided 6 months from the effective date of this rule.

b. The oyster bioconcentration test shall be completed and the final results submitted to EPA within 18 months of the effective date of the final test rule. Interim progress reports shall be provided at 6 months and 12 months from the effective date of this rule.

c. The sediment toxicity test shall be completed and the final results submitted to EPA within 2 years of the effective date of the final test rule. Interim progress reports shall be provided at 6 months, 12 months, and 18 months from the effective date of this rule. The allotted time to complete this test was extended from 18 months to 2 years to be consistent with other section 4 rules.

d. The fish and daphnid chronic toxicity tests shall be completed and the final results submitted to the Agency within 2 years of the date that EPA publishes a **Federal Register** notice or notifies the test sponsor by certified letter that production/imports have reached 3 million lb per year and Tier I test results necessary to trigger chronic aquatic toxicity testing were obtained. If this testing is triggered, interim progress reports shall be provided at 6 months, 12 months, and 18 months from the date of publication of the **Federal Register** notice or receipt of notification. The allotted time to complete these tests was extended from 1 year to 2 years to be consistent with other section 4 rules.

e. The biodegradability in activated sludge and biodegradation rate tests shall be completed and the final results submitted to EPA within 1 year of the date that EPA publishes a **Federal Register** notice or notifies the test sponsor by certified letter that production/imports have reached 3 million lb per year if those criteria necessary to trigger biodegradation testing are met. If this testing is triggered, an interim progress report shall be provided 6 months from the date of publication of the **Federal Register** notice or receipt of notification.

TSCA section 14(b) governs Agency disclosure of all test data submitted pursuant to section 4 of TSCA. Upon receipt of data required by this rule, the Agency will publish a notice of receipt in the **Federal Register** as required by section 4(d).

Persons who export a chemical substance or mixture which is subject to a section 4 test rule are subject to the export reporting requirements of section 12(b) of TSCA. Final regulations interpreting the requirements of section 12(b) are in 40 CFR Part 707 (December 16, 1980; 45 FR 82844). In brief, as of the effective date of this test rule, an exporter of anthraquinone must report to EPA the first annual export or intended export of anthraquinone to any one country. EPA will notify the foreign country concerning the test rule for the chemical.

2. *Under section 8.* Any person who manufactures or imports anthraquinone (other than small manufacturers and importers) after the effective date of this rule must submit a report 60 days after the conclusion of their corporate fiscal year in which they manufactured or imported anthraquinone.

Any person who manufactures or imports anthraquinone (other than small manufacturers and importers) in a year following that for which an initial report was submitted must submit a new report for each corporate fiscal year in which he/she manufactures or imports the named substance. This report is due 60 days after the conclusion of their corporate fiscal year in which they manufactured or imported anthraquinone.

The report must contain the following information:

(1) Company name and address.

(2) Name, address, and telephone number of the principal technical contact.

(3) The quantity (by weight) of anthraquinone manufactured or

imported during the latest corporate fiscal year.

If this report is submitted within the year preceding the start of a reporting period under the Inventory Update Rule, the submitter will not be required to report the same information again for that reporting period. The details of this exemption are set forth in 40 CFR 710.35.

F. Enforcement Provisions

The Agency considers failure to comply with any aspect of a section 4 rule or a section 8 rule to be a violation of section 15 of TSCA. Section 15(1) of TSCA makes it unlawful for any person to fail or refuse to comply with any rule or order issued under section 4. Section 15(3) of TSCA makes it unlawful for any person to fail or refuse to: (1) Establish or maintain records, (2) submit reports, notices, or other information, or (3) permit access to or copying of records required by the Act or any regulation or rule issued under TSCA.

Additionally, TSCA section 15(4) makes it unlawful for any person to fail or refuse to permit entry or inspection as required by section 11. Section 11 applies to any "establishment, facility, or other premises in which chemical substances or mixtures are manufactured, processed, stored, or held before or after their distribution in commerce * * *." The Agency considers a testing facility to be a place where the chemical is held or stored and, therefore, subject to inspection. Laboratory inspections and data audits will be conducted periodically in accordance with the authority and procedures outlined in TSCA section 11 by duly designated representatives of the EPA for the purpose of determining compliance with any final rule for anthraquinone. These inspections may be conducted for purposes which include verification that testing has begun, that schedules are being met, and that reports accurately reflect the underlying raw data and interpretations, and evaluations to determine compliance with TSCA GLP standards and the test standards established in the rule.

EPA's authority to inspect a testing facility also derives from section 4(b)(1) of the TSCA, which directs EPA to promulgate standards for the development of test data. These standards are defined in section 3(12)(B) of TSCA to include those requirements necessary to assure that data developed under testing rules are reliable and adequate, and to include such other requirements as are necessary to provide such assurance. The Agency maintains that laboratory inspections are necessary to provide this assurance.

Violators of TSCA are subject to criminal and civil liability. Persons who submit materially misleading or false information in connection with the requirement of any provision of this rule may be subject to penalties which may be calculated as if they never submitted their data. Under the penalty provision of section 16 of TSCA, any person who violates section 15 could be subject to a civil penalty of up to $25,000 for each violation with each day of operation in violation constituting a separate violation. This provision would be applicable primarily to manufacturers that fail to submit a letter of intent or an exemption request and that continue manufacturing after the deadlines for submissions. This provision would also apply to processors that fail to submit a letter of intent or an exemption application and continue processing after the Agency has notified them of their obligation to submit such documents (see 40 CFR 790.48(b)). Intentional violations could lead to the imposition of criminal penalties of up to $25,000 for each day of violation and imprisonment for up to 1 year. In determining the amount of penalty, EPA will take into account the seriousness of the violation and the degree of culpability of the violator, as well as all other factors listed in TSCA section 16. Other remedies are available to EPA under section 17 of TSCA, such as seeking an injunction to restrain violations of TSCA section 4.

Individuals as well as corporations could be subject to enforcement actions. Sections 15 and 16 of TSCA apply to "any person" who violates provisions of TSCA. EPA may, at its discretion, proceed against individuals as well as companies themselves. In particular, this includes individuals who report false information or who cause it to be reported. In addition, the submission of false, fictitious, or fraudulent statements is a violation under 18 U.S.C. 1001.

IV. Economic Analysis of Final Test Rule

To assess the potential economic impact of this rule, EPA has prepared an economic analysis (Ref. 11) that evaluates the potential for significant economic impacts on the industry as a result of the required testing. The economic analysis estimates the costs of conducting the required testing and evaluates the potential for significant adverse economic impact as a result of these test costs by examining four market characteristics of anthraquinone: (1) Price sensitivity of demand, (2) industry cost characteristics, (3) industry structure, and (4) market expectations. If there is no indication of adverse effect, no further economic analysis is performed; however, if the first level of analysis indicates a potential for significant economic impact, a more comprehensive and detailed analysis is conducted which more precisely predicts the magnitude and distribution of the expected impact.

Total testing costs for the first tier of testing specified in the final rule for anthraquinone are estimated to range from $51,600 to $68,500. The cost of performing the alternative sediment toxicity test using *Chironomus* will be comparable to the cost of testing *Rhepoxynius*. Any slight difference will not substantially affect the economic impact of this rule. The total costs for the second tier of testing are estimated to range from $95,600 to $124,300. In order to predict the financial decision-making practices of manufacturing firms, these costs have been annualized. Annualized costs are compared with annual revenue as an indication of potential impact. The annualized costs represent equivalent constant costs which would have to be recouped each year of the payback period in order to finance the testing expenditure in the first year.

The annualized costs of the mandatory minimum (tier I) tests (using a cost of capital of 25 percent over a period of 15 years) range from $13,400 to $17,800. Based on an estimated minimum annual importation level of one million pounds, the unit test costs will range from 1.34 to 1.8 cents per pound. In relation to a selling price of $2.25 per pound for anthraquinone, these costs are equivalent to 0.58 to 0.8 percent of price.

The annualized costs of the conditional (tier II) tests range from $24,800 to $32,200. When production/imports reach 3 million pounds per year, the unit test costs of the tier II tests will be from 0.83 to 1.07 cents per pound. In relation to the current selling price, the combined tier I and tier II unit costs (2.1 to 2.9 cents per pound) are equivalent to 0.93 to 1.3 percent of price.

EPA estimates that the cost of preparing and submitting the section 8(a) report will be minimal. Small manufacturers and importers are exempt from reporting, and there is no official form to be completed. A company may submit the information in whatever manner it finds appropriate. A company's cost of reporting under the rule will be a function of the cost of labor for those doing the reporting and the number of hours it takes for them to comply. EPA estimates that the direct filing cost for the section 8(a) report ranges from $150 to $500.

Based on these costs and the uses of anthraquinone, the economic analysis indicates that the potential for significant adverse economic impact as a result of this testing rule is low. This conclusion is based on the low estimated unit test costs. Refer to the economic analysis for a complete discussion of test cost estimation and the potential for economic impact resulting from these costs.

V. Availability of Test Facilities and Personnel

Section 4(b)(1) of TSCA requires EPA to consider "the reasonably foreseeable availability of the facilities and personnel needed to perform the testing required under the rule." Therefore, EPA conducted a study to assess the availability of test facilities and personnel to handle the additional demand for testing services created by section 4 test rules. Copies of the study, Chemical Testing Industry: Profile of Toxicological Testing, can be obtained through the NTIS (PB 82-140773). On the basis of this study, the Agency believes that there will be available test facilities and personnel to perform the testing in this rule.

VI. Rulemaking Record

EPA has established a public record for this rulemaking proceeding [docket number OPTS-42076A]. This record includes:

A. Supporting Documentation

(1) **Federal Register notices pertaining** to this rule consisting of:

(a) Notice containing the ITC designation of anthraquinone to the Priority List (49 FR 46931; November 29, 1984).

(b) Rules requiring TSCA section 8 (a) and (d) reporting on anthraquinone (49 FR 46739, 49 FR 46741; November 28, 1984).

(c) Notice of EPA's proposed test rule on anthraquinone (50 FR 46090; November 6, 1985).

(d) Notice containing TSCA test guidelines cited as test standards for this rule (52 FR 19056; May 20, 1987).

(e) Notice of TSCA test guidelines revisions (51 FR 1522; January 14, 1986).

(f) Notice of final rulemaking on data reimbursement (48 FR 31786; July 11, 1983).

(g) Notice of interim final rule on single-phase test rule development and exemption procedures (50 FR 20652; May 17, 1985).

(h) TSCA GLP standards (48 FR 53922; Nov. 29, 1983).

(2) Anthraquinone economic analysis.

(3) Communications after proposal consisting of:

(a) Written public comments and letters.

(b) Contact reports of telephone conversations.

(4) Reports—published and unpublished factual materials.

B. References

(1) CIL, Inc., North York, Ontario, Canada. Comments on anthraquinone public meeting of April 23, 1985. Submitted to the Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, DC 20460. (September 19, 1985).

(2) CIL, Inc., North York, Ontario, Canada. Comments on proposed test rule for anthraquinone. Submitted to the Office of Toxic Substances, U.S. Environmental Protection Agency, Washington, DC 20460. (February 26, 1986).

(3) Handout at anthraquinone public meeting. (April 23, 1985).

(4) Roy F. Weston, Inc., West Chester, PA 19380. "Environmental testing programs for anthraquinone. Section 3. Biodegradability testing." (April 1980).

(5) Mobay Chemical Corporation, Industrial Chemicals Division, Pittsburgh, PA 15205. Letter from Bruce Burba of Mobay Chemical Corp. to Dr. Richard Schauer of ICI United States, Inc., Wilmington, DE 19897. (October 26, 1978).

(6) Roy F. Weston, Inc., West Chester, PA 19380. "Environmental testing programs for anthraquinone. Section 4. Impact of anthraquinone on anaerobic digesters." (April 1980).

(7) MacPhee, C. and Ruelle, R. "Lethal effects of 1,888 chemicals upon four species of fish from western North America." Forest Wildlife and Range Experiment Station. Moscow, ID. Univ. of Idaho. (November 1969).

(8) Pulp and Paper Research Institute of Canada, Pointe Claire, PQ, Canada. Letter from J.M. MacLeod to Dr. H.H. Holton, CIL Chemicals, Montreal, Quebec, Canada. (November 29, 1977).

(9) Geake, A. and Lemon, J.T. "Semiquinone formation by anthraquinone and some simple derivatives." *Transactions of the Faraday Society* 34:1409-1427 (1938).

(10) USITC. U.S. International Trade Commission. Imports of Benzenoid Chemicals and Products, 1983. Publication No. 1548, Washington, DC U.S. Government Printing Office. (1984).

(11) USEPA. U.S. Environmental Protection Agency. Economics and Technology Division. "Economic evaluation of final test rule for anthraquinone." (September 26, 1986).

(12) Denit, J.D., Dellinger, R.W., and W.D. Smith. "Development Document for Effluent Limitations Guidelines New Source Performance Standards and Pretreatment Standards for the Pulp, Paper and Paperboard and the Builders' Paper and Board Mills Point Source Categories". USEPA. (October 1982).

(13) ICI Americas, Inc., Wilmington, DE 19897. Indirect Food Additive Petition for the use of 9,10-anthraquinone as a pulping processing aid. Volume I. Section H. Submitted to Food and Drug Administration. (August 9, 1978).

(14) USEPA. U.S. Environmental Protection Agency. "Chemical property and environmental behavior estimates for chemicals on the 15th ITC priority list." Intra-agency memo from Pat Harrigan, EED, to Jeff Davidson, TRDB. (November 29, 1984).

(15) Games, L.M. and Hites, R.A. "Composition, treatment efficiency, and environmental significance of dye manufacturing effluents." *Analytical Chemistry*. 49 :433-440. (1977).

(16) Zanella, E.F., McKelvey, R.D., and Joyce, T.W. "Effect of anthraquinone on toxicity and treatability of bleached kraft pulp mill effluents." *Tappi* 62(2):65-67. (1979).

(17) Chillingworth, M.A. "The toxicity of aminoanthraquinone dyes to fish and algae." In: Dyes and the Environment. American Dye Manufacturers Institute, Inc. (1974). As reported at 49 FR 46937; November 29, 1984.

(18) Swartz, R.C., DeBen, W.A., Jones, J.K.P., Lambertson, J.O., and Cole, F.A. "Phoxocephalid amphipod bioassay for marine sediment toxicity." In: Aquatic Toxicology and Hazard Assessment: Seventh Symposium, ASTM STP 854. R.D. Caldwell, R. Purdy, and R.C. Bahner, Eds., American Society for Testing and Materials, Philadephia, pp. 284-307 (1985).

(19) Bourquin, A.W., Hood, M.A., and Garnas, R.L. "An artificial microbial ecosystem for determining effects and fate of toxicants in a saltmarsh environment." Ch. 11 in Vol. 18 of Developments in Industrial Microbiology. Published by the Society for Industrial Microbiology. (1977).

(20) Chemical Marketing Reporter, pg. 13. (Oct. 1, 1984).

(21) Roy F. Weston, Inc., West Chester, PA 19380. "Environmental testing programs for anthraquinone. Section 8. Acute toxicity to fish." (April 1980).

(22) Syracuse Research Corporation, Merrill Lane, Syracuse, New York 13210. "Anthraquinone Derivatives." Technical Support Document. (October 24, 1986).

(23) Adams, W.J., Kimerle, R.A., and Mosher, R.G., "Aquatic safety assessment of chemicals sorbed to sediments." In: Aquatic Toxicology and Hazard Assessment: Seventh Symposium, ASTM STP 854. R.D. Caldwell, R. Purdy, and R.C. Bahner, Eds., American Society for Testing and Materials, Philadelphia, PA, pp. 429-453 (1985).

(24) USEPA. "Response to Public Comments, Proposed Revision of TSCA Test Guidelines as published in 51 FR 1522 (January 14, 1986)". Test Rules Development Branch, Existing Chemicals Assessment Division, Office of Toxic Substances, Environmental Protection Agency, Washington, D.C. (January 1987).

(25) USEPA. U.S. Environmental Protection Agency. "Anthraquinone concentrations in water columns and bottom sediments of receiving streams as a result of its use in pulping." Intraagency memo from Nancy Chiu, Modeling Section, Design and Development Branch, Exposure Evaluation Division, to Catherine Roman, TRDB. Non-CBI version. July 25, 1985.

The record is available for inspection from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays, in Rm. NE-G004, 401 M St., SW., Washington, DC 20460.

VII. Other Regulatory Requirements

A. Classification of Rule

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. EPA has determined that this test rule is not major because it does not meet any of the criteria set forth in section 1(b) of the Order; i.e., it will not have an annual effect on the economy of at least $100 million, will not cause a major increase in prices, and will not have a significant adverse effect on competition or the ability of U.S. enterprise to compete with foreign enterprises.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any written comments from OMB to EPA, and any EPA response to those comments, are included in the rulemaking record.

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act (15 U.S.C. 601 *et seq.*, Pub. L. 96-354, September 19, 1980), EPA is certifying that this test rule will not have a significant impact on a substantial number of small businesses because: (1) They are not likely to perform testing themselves, or to participate in the organization of the testing effort; (2) they will experience only very minor costs, if any, in securing exemption from testing requirements; (3) they are unlikely to be affected by reimbursement requirements; and (4) they are exempt from the section 8(a) reporting requirements.

C. Paperwork Reduction Act

OMB has approved the information collection requirements contained in this final rule under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, and has assigned OMB control numbers 2070-0033 and 2070-0067.

List of Subjects in 40 CFR Parts 704, 795 and 799

Testing, Environmental protection, Hazardous substances, Chemicals, Reporting and recordkeeping requirements, Incorporation by reference.

Dated: May 22, 1987.

Victor J. Kimm,

Assistant Administrator for Pesticides and Toxic Substances.

Therefore, 40 CFR Chapter I is amended as follows:

PART 704—[AMENDED]

1. Part 704 is amended as follows:

a. The authority citation for Part 704 continues to read as follows:

Authority: 15 U.S.C. 2607.

b. By adding § 704.30 to read as follows:

§ 704.30 Anthraquinone.

(a) *Substance for which reporting is required.* The chemical substance for which reporting is required under this section is 9,10-anthraquinone (Chemical Abstract Service Registry Number 84-65-1).

(b) *Persons who must report.* Unless exempt as provided in § 704.5, persons (other than small manufacturers and importers) who manufacture or import 9,10-anthraquinone for commercial purposes after July 20, 1987 are subject to the reporting requirements of this section. Persons may be required to report more than once in response to this section.

(c) *When to report.* Persons described in paragraph (b) of this section must submit a report within 60 days of the completion of every corporate fiscal year during which they manufactured or imported 9,10-anthraquinone after July 20, 1987. Persons must submit a separate report for each corporate fiscal year in which they are subject to this section.

(d) *What information to report.* All persons subject to this section shall report the following information to EPA.

(1) Company name and headquarters address.

(2) Name, address, and telephone number (including area code) of the company's principal technical contact.

(3) The quantity (in pounds) of 9,10-anthraquinone manufactured or imported during the person's latest complete corporate fiscal year.

(e) *Where to send reports.* Reports must be submitted by certified mail to the Document Control Office, Environmental Protection Agency, TS-790, 401 M St., SW., Washington, DC 20460. Attn: TSCA 8(a).

PART 795—[AMENDED]

2. Part 795 is amended as follows:

a. The authority citation for Part 795 continues to read as follows:

Authority: 15 U.S.C. 2603, 2611, 2625.

b. By adding a new Subpart B consisting at this time of § 795.45 to read as follows:

Subpart B—Provisional Chemical Fate Guidelines

§ 795.45 Inherent biodegradability: Modified SCAS test for chemical substances that are water insoluble or water insoluble and volatile.

(a) *Introductory information*—(1) *Prerequisites.* (i) Water solubility of the test chemical must be established.

(ii) The organic carbon content of the test chemical must be established.

(2) *Guidance information.* (i) Information on the relative proportions of the major components of the test chemical will be useful in interpreting the results obtained.

(ii) Information on the toxicity of the chemical may be useful to the interpretation of low results and in the selection of appropriate test concentrations.

(3) *Standard documents.* This Test Guideline has been based on the papers cited under paragraph (d) (1) and (2) of this section.

(b) *Method*—(1) *Introduction, purpose, scope, relevance, application and limits of test*—(i) *The method.* (A) The method is an adaptation of the Soap and Detergent Association Semi-Continuous Activated Sludge (SCAS) procedure for assessing the primary biodegradation of alkylbenzene sulphonate. The method involves exposure of the chemical to relatively high concentrations of microorganisms over a long time period (possibly several months). The viability of the microorganisms is maintained over this period by daily addition of a settled sewage feed.

(B) Since the conditions provided by the test are highly favorable to the selection and/or adaptation of microorganisms capable of degrading the test chemical, the procedure may also be used to produce microbial inocula adapted to selected chemicals for use in other tests. The test is applicable to organic chemicals that are water insoluble or water insoluble and volatile and that are not inhibitory to bacteria at the test concentration.

(ii) *Reference chemicals.* In some cases when investigating a new chemical, reference chemicals may be useful; however, specific reference chemicals cannot yet be recommended. Data on several chemicals used in interlaboratory tests are provided (see Table 1 in this paragraph) primarily so that calibration of the method may be performed from time to time and to permit comparison of results when another method is employed.

TABLE 1.—EXAMPLES OF RESULTS OF SCAS TEST ON VARIOUS CHEMICALS USED IN THE OECD/EEC INTERLABORATORY TEST

Test chemical	O_T (mg/l)	O_t-O_c (mg/l)	Percentage biodegradation bioelimination
14-Acetylaminobenzene sulphonate	17.2	2.0	85
Tetrapropyleneben-zene sulphonate	17.3	6.4	51.4
4-Nitrophenol	16.9	0.8	95.3
Diethylene glycol	16.5	0.2	98.8
Aniline	16.9	1.7	95.9
Cyclopentane tetracarboxylate	17.9	3.2	81.1

Duration of test is 40 days, except 120 days for cyclopentane tetracarboxylate.

(iii) *Principle of the test method.* (A) Activated sludge from a sewage treatment plant is placed in an aeration (SCAS) unit. The test chemical and settled domestic sewage are added, and the mixture is aerated for 23 hours. The aeration is then stopped, the sludge is allowed to settle, and the supernatant liquor is removed. The sludge remaining in the aeration chamber is then mixed with a further aliquot of test chemical and sewage and the cycle is repeated.

(B) This method requires use of a chemical-specific analytical technique or ^{14}C-labeled test chemical. The purpose of the method is to determine the fate of the test chemical in a conventional activated sludge treatment plant. To this end, a complete mass balance for the test chemical is established by quantifying parent chemical in settled effluent sludge solids (insoluble test chemicals whether volatile or not), effluent plus solids (insoluble test chemicals whether volatile or not), and off gases (volatile test chemicals only). The identification and quantification of degradation products in all phases are recommended, but not required.

(iv) *Quality criteria*—(A) *Reproducibility.* When primary biodegradation is considered, very precise data are obtained for chemicals that are extensively degraded. The results reported in the reference under paragraph (d)(1) of this section suggest 95-percent confidence limits of less than ±3 percent, and this includes interlaboratory tests. As would be expected, wider confidence limits are obtained for less biodegradable chemicals.

(B) *Possibility of standardization.* Since the method uses a feed of settled sewage, absolute standardization is not possible unless this feed were replaced by synthetic sewage. However, since the method is designed to give an indication of the biodegradability potential of a chemical and is not a simulation test such standardization is unnecessary.

(C) *Possibility of automation.* Automation of this method would be possible but would be expensive. As the method is not labor intensive, the exercise would offer few advantages.

(2) *Description of the test procedure*—(i) *Preparations.* (A) The aeration units are cleaned and fixed in a suitable support. The air inlet tubes are connected to the supply manifold. A small laboratory-scale air compressor is used to aerate the units, and the air is presaturated with water to reduce evaporation losses from the units.

(B) If the test chemical is volatile, exhaust gases from the aeration units shall be passed through a suitable trap (such as Amberlite XAD–4, Rohm and Haas, Phila., PA) to remove volatilized organics.

(C) A sample of mixed liquor from an activated sludge plant treating predominantly domestic sewage is obtained. Approximately 150 milliliters (ml) of the mixed liquor are required for each aeration unit.

(D) The organic carbon analyzer is calibrated using potassium hydrogen phthalate.

(E) Stock solutions of the test chemicals are prepared: The concentration normally required is 400 milligrams per liter (mg/L) as organic carbon which gives a test chemical concentration of 20 mg/L carbon at the start of each aeration cycle if no biodegradation is occurring.

(F) If the test chemical is insoluble in water at 400 mg/L it may be necessary to use ultrasound dispersion to obtain a uniform stable suspension. Alternatively, test chemical may be added directly to the aeration units.

(G) The organic carbon content of the stock solutions is measured.

(ii) *Test conditions.* A high concentration of aerobic microorganisms is used, and the effective detention period is 36 hours. The carbonaceous material in the sewage feed is oxidized extensively within 8 hours of the start of each aeration cycle. Thereafter, the sludge respires endogenously for the remainder of the aeration period, during which time the only available substrate is the test chemical unless this is also readily metabolized. These features, combined with daily reinoculation of the test when domestic sewage is used as the medium, provide highly favorable conditions for both adaptation and biodegradation.

(iii) *Performance of the test.* (A) A sample of mixed liquor from a suitable activated sludge plant is obtained and aerated during transportation to the laboratory. Each aeration unit is filled with 150 ml of mixed liquor, and the aeration is started. After 23 hours, aeration is stopped, and the sludge is allowed to settle for 45 minutes. The tap is opened, and 100 ml of the supernatant liquor is withdrawn. A sample of settled domestic sewage is obtained immediately before use, and 100 ml are added to the sludge remaining in each aeration unit. Aeration is started anew. At this stage no test chemicals are added, and the units are fed daily with domestic sewage only until a clear supernatant liquor is obtained on settling. This usually takes up to 2 weeks, by which time the dissolved organic carbon in the supernatant liquor at the end of each aeration cycle should be less than 12 mg/L.

(B) At the end of this period the individual settled sludges are mixed, and 50 ml of the resulting composite sludge are added to each unit.

(C) One hundred ml of settled sewage are added to the control units, and 95 ml of settled sewage plus 5 ml of the appropriate test chemical stock solution or suspension (400 mg organic carbon/L) to the test units. If test chemical is added directly to aeration units, 100 ml of settled sewage is added, as in the control units.

(D) Aeration is started again and continued for 23 hours. The sludge is then allowed to settle for 45 minutes and the supernatant drained off and analyzed for parent chemical. Before analysis the liquors are filtered through washed 0.45-micrometer membrane filters and certifuged. Temperature of the sample must not exceed 40 °C while it is in the centrifuge.

(E) If the test chemical is insoluble or expected to sorb significantly to sludge solids, settled sludge is also collected by an appropriate means (such as centrifugation) and extracted to remove test chemical, and the extract is analyzed for parent chemical.

(F) If the test chemical is volatile, traps for removing volatile organics from exhaust gases are also extracted and the extracts analyzed for parent chemical.

(G) The fill and draw procedure under paragraph (b)(2)(iii) (C) through (F) of this section is repeated daily throughout the test.

(H) Before settling, it may be necessary to clean the walls of the units to prevent the accumulation of solids

above the level of the liquid. A separate scraper or brush is used for each unit to prevent cross contamination.

(l) The length of the test for chemicals showing little or no biodegradation is indeterminate, but experience suggests that this should be at least 12 weeks.

(c) *Data and reporting*—(1) *Treatment of the results.* (i) The concentration of parent chemical in settled effluent sludge solids (insoluble test chemicals whether volatile or not), effluent plus solids (insoluble test chemicals whether volatile or not), and off-gases (volatile test chemicals only) is plotted versus time for the test units. As biodegradation is achieved the level of the test chemical will decrease and approach a steady state. Once the levels of the test chemical are found to be constant over three consecutive measurements, three further measurements are made.

(ii) An example of the application of specific analytical technique to the SCAS test is discussed in the reference in paragraph (d)(2) of this section.

(d) *Literature references.* For additional background information on this test guideline the following references should be consulted:

(1) "A Procedure and Standards for the Determination of the Biodegradability of Alkyl Benzene Sulphonate and Linear Alkylate Sulphonate", *Journal of the American Chemical Society,* 42:986, 1965.

(2) Games, L.M., King, J.E., and Larson, R.J. "Fate and distribution of a quaternary ammonium surfactant octadecyltrimethylammonium chloride (OTAC), in wastewater treatment." *Environmental Science and Technology.* 16:483–486, 1982.

(Information collection requirements are approved by the Office of Management and Budget under control number 2070–0067.)

PART 799—[AMENDED]

3. Part 799 is amended as follows:

a. The authority citation for Part 799 continues to read as follows:

Authority: 15 U.S.C. 2603, 2611, 2625.

b. By adding § 799.500, to read as follows:

§ 799.500 Anthraquinone.

(a) *Identification of test substance.* (1) 9,10-anthraquinone (CAS No. 84–65–1) (hereinafter "anthraquinone") shall be tested in accordance with this section.

(2) Anthraquinone of at least 99 percent purity shall be used as the test substance.

(b) *Persons required to submit study plans, conduct tests, and submit data.* All persons who manufacture, import or process anthraquinone, other than as an impurity, from July 20, 1987 to the end of the reimbursement period shall submit letters of intent to conduct testing or exemption applications, submit study plans, conduct tests (in accordance with Part 792 of this chapter), and submit data as specified in this section, Subpart A of this Part, and Part 790 of this chapter for single-phase rulemaking.

(c) *First tier chemical fate and environmental effects testing*—(1) *Water solubility*—(i) *Required testing.* Water solubility tests shall be conducted with anthraquinone in accordance with the test guideline specified under § 796.1860 of this chapter. The tests shall be conducted at 12 °C and 22 °C for use in tests with cold and warm water species.

(ii) *Reporting requirements.* (A) The water solubility tests shall be completed and the final results submitted to the Agency within 1 year of the effective date of the final rule.

(B) A progress report shall be submitted 6 months after the effective date of the final rule.

(2) *Fish acute toxicity*—(i) *Required testing.* (A) Fish acute toxicity tests shall be conducted with anthraquinone using chinook salmon, *Oncorhynchus tshawytscha,* or coho salmon, *Oncorhynchus kisutch* (cold water species); bluegill, *Lepomis macrochirus* (warm water species); and rainbow trout, *Salmo gairdneri* (cold water species) in accordance with the test guideline specified under § 797.1400 of this chapter, except for paragraph (c)(4)(i) of § 797.1400.

(B) For the purposes of this section, the following provisions also apply:

(*1*) A minimum of 20 fish each shall be exposed to each of five or more test substance concentrations. The highest concentration shall be less than or equal to the solubility limit of anthraquinone. At least one concentration shall be between 1 part per billion (ppb) and 10 ppb.

(*2*) The total and dissolved (e.g., filtered) concentrations of the test substance shall be measured in each test chamber and the delivery chamber before the test to ascertain whether it is in solution.

(*3*) The test shall be performed under flowthrough conditions.

(ii) *Reporting requirements.* (A) The fish acute toxicity tests shall be completed and the final results submitted to the Agency within 1 year of the effective date of the final rule.

(B) A progress report shall be submitted 6 months after the effective date of the final rule.

(3) *Aquatic invertebrate acute toxicity*—(i) *Required testing.* (A) Aquatic invertebrate acute toxicity tests shall be conducted with anthraquinone using *Daphnia magna* or *D. pulex* and oyster, *Crassostrea virginica,* using the test guidelines specified under §§ 797.1300 and 797.1800 of this chapter, except for paragraph (c)(4)(ii) of § 797.1300.

(B) For the purpose of this section as it relates to § 797.1300 of this chapter, the following provisions also apply:

(*1*) A minimum of 20 daphnids per concentration shall be exposed to five or more concentrations of the test substance chosen in a geometric series in which the ratio is between 1.5 and 2.0 (e.g., 2, 4, 8, 16, 32, and 64 milligrams per liter (mg/L)). The highest concentration shall be less than or equal to the solubility limit of anthraquinone. At least one concentration shall be between 1 ppb and 10 ppb. An equal number of daphnids shall be placed in two or more replicates. If solvents, solubilizing agents or emulsifiers have to be used, they shall be commonly used carriers and shall not possess a synergistic or antagonistic effect on the toxicity of the test chemical. The concentration of solvent shall not exceed 0.1 milliliter per liter (ml/l).

(*2*) The test shall be performed under flowthrough conditions.

(*3*) The total and dissolved (e.g, filtered) concentrations of the test substance shall be measured in each test chamber and the delivery chamber before the test to ascertain whether it is in solution.

(*4*) The stability of the stock solution for the duration of the experiment must be analyzed and reported.

(*5*) The pH of the test solution shall be 7.

(C) For the purpose of this section as it relates to § 797.1800 of this chapter the following provisions also apply:

(*1*) The highest test concentration shall be less than or equal to the solubility limit of anthraquinone.

(*2*) At least one test concentration shall be between 1 ppb and 10 ppb.

(*3*) The total and dissolved (e.g., filtered) concentrations of the test substance shall be measured in each test chamber and the delivery chamber before the test to ascertain whether it is in solution.

(ii) *Reporting requirements.* (A) The invertebrate acute toxicity tests shall be completed and the final results submitted to the Agency within 1 year of the effective date of the final rule.

(B) A progress report shall be submitted 6 months after the effective date of the final rule.

(4) *Sediment toxicity to benthic invertebrates*—(i) *Required testing.* A sediment toxicity test shall be

conducted using one of the following two methods. (A) *Rhepoxynius* partial life cycle toxicity in sediment: A 10-day toxicity test in a static seawater system shall be conducted with the marine amphipod, *Rhepoxynius abronius*, using clean sediments having low, medium, and high organic carbon content spiked with anthraquinone in the concentration range of 0.01 to 1 part per million (ppm), according to the test guideline specified in the American Society for Testing and Materials Special Technical Testing Publication 854 (ASTM STP 854) entitled, "Phoxocephalid Amphipod Bioassay for Marine Sediment Toxicity," by R.C. Swartz, W.A. DeBen, J.K.P. Jones, J.O. Lamberson, and F.A. Cole and published in *Aquatic Toxicology and Hazard Assessment: Seventh Symposium*, ASTM STP 854, pp. 284–307, R.D. Caldwell, R. Purdy, and R.C. Bahner, Eds., 1985, which is incorporated by reference. (B) *Chironomus* partial life cycle toxicity in sediment: A 14-day toxicity test in a flowthrough system shall be conducted with the freshwater midge, *Chironomus tentans*, using clean, natural sediments having low, medium, and high organic carbon content spiked with anthraquinone in the concentration range of 0.01 to 1 ppm, according to the test guideline specified in the American Society for Testing and Materials Special Technical Testing Publication 854 (ASTM STP 854) entitled, "Aquatic Safety Assessments of Chemicals Sorbed to Sediments," by W.J. Adams, R.A. Kimerle, and R.G. Mosher and published in *Aquatic Toxicology and Hazard Assessment: Seventh Symposium*, ASTM STP 854, pp. 429–452, R.D. Caldwell, R. Purdy, and R.C. Bakner, Eds., 1985, which is incorporated by reference. The ASTM STP 854 is available for inspection at the Office of the Federal Register, Rm. 8401, 1100 L St., NW., Washington, D.C. This incorporation by reference was approved by the Director of the Office of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. This material is incorporated as it exists on the effective date of this rule, and a notice of any change in this material will be published in the Federal Register. Copies of the incorporated material may be obtained from the Document Control Officer (TS–793), Office of Toxic Substances, EPA, Rm. 107, 401 M St., SW., Washington, DC 20460, and from the American Society for Testing and Materials (ASTM), 1916 Race St., Philadelphia, PA 19103.

(ii) *Reporting requirements.* (A) The sediment toxicity test shall be completed and the final results submitted to the Agency within 2 years of the effective date of the final rule.

(B) Progress reports shall be submitted at 6-month intervals beginning 6 months after the effective date of the final rule.

(5) *Bioconcentration*—(i) *Required testing.* (A) A bioconcentration test shall be conducted with anthraquinone using oyster, *Crassostrea virginica*, in accordance with the test guideline specified under § 797.1830 of this chapter, except for paragraph (c)(4) (ii) and (vi)(A) of § 797.1830.

(B) For the purpose of this section the following provisions also apply:

(*1*) At least two concentrations shall be tested which are at least a factor of 10 apart to assess the propensity of the substance to bioconcentrate. The concentrations selected should not stress or adversely affect the oysters and should be less than one-tenth the EC50 determined in either the range-finding or 96-hour definitive test under § 797.1800 of this chapter. The test concentrations shall be less than the solubility limit of the test substance in water and shall be close to 1 ppb to 10 ppb. The limiting factor of how low one can test is based on the detection limits of the analytical methods. The concentration of the test substance in the test solution should be at least 10 times greater than the detection limit in water.

(*2*) The test shall not be started until the test substance delivery system has been observed to be functioning properly and the test substance concentrations have equilibrated (i.e, the concentration does not vary more than 20 percent). Analyses of two sets of test solution samples taken prior to test initiation should document this equilibrium. At initiation (time 0), the total and dissolved (e.g, filtered) concentrations of test substance shall be measured in the delivery chamber and each test chamber prior to the addition of oysters to the test chambers to ascertain whether it is in solution.

(ii) *Reporting requirements.* (A) The bioconcentration test shall be completed and the final results submitted to the Agency within 18 months of the effective date of the final rule.

(B) Progress reports shall be submitted at 6-month intervals beginning 6 months after the effective date of the final rule.

(d) *Second-tier chemical fate and environmental effects testing.* The following second-tier tests shall be conducted if EPA determines that the total annual volume of anthraquinone manufactured and imported in the United States during a single calendar year exceeds 3 million pounds, and the acute toxicity testing triggers described in this paragraph are met. EPA will monitor the production and importation volume of anthraquinone by the requirement under § 704.30 of this chapter that manufacturers and importers of anthraquinone submit section 8(a) reports to the Agency. EPA will publish notification in the Federal Register or notify the test sponsors by certified letter if the manufacture/importation volume trigger and an acute toxicity trigger are met.

(1) *Biodegradability in activated sludge systems*— (i) *Required testing.* (A) Biodegradability tests in activated sludge systems shall be conducted with anthraquinone in accordance with the test method entitled "Inherent biodegradability: Modified SCAS (semi-continuous activated sludge) test for chemical substances that are water insoluble or water insoluble and volatile" as specified under § 795.45 of this chapter except for paragraphs (b)(2)(i) (E), (F) and (iii)(c) of § 795.45, if EPA determines that the production/importation volume of anthraquinone in the United States during a single calendar year exceeds 3 million pounds, and any of the following conditions is met: (A) The LC50 of the most sensitive fish or the EC50 of the daphnid or oyster, as determined by the acute toxicity tests conducted in accordance with paragraph (c) (2) or (3) of this section, respectively, is less than 100 times the predicted environmental concentration (PEC) in water, i.e., less than 500 ppb; (B) the LC50 of *Rhepoxynius* or *Chironomus*, as determined by the sediment toxicity test conducted in accordance with paragraph (c)(4) of this section, is less than 100 times the PEC in sediment, i.e., less than 10 ppm; or (C) the oyster bioconcentration factor, as determined by the oyster bioconcentration test conducted in accordance with paragraph (c)(5) of this section, is greater than 3,000.

(B) For the purpose of this section the following provisions also apply:

(*1*) A stock solution of C^{14}-labeled anthraquinone shall be prepared at a concentration of 2 mg/L which gives a test substance concentration of 0.1 mg/L anthraquinone at the start of each aeration cycle if no biodegradation is occurring.

(*2*) If anthraquinone is insoluble in water at 2 mg/L, it may be necessary to use ultrasound dispersion to obtain a uniform stable suspension. Alternatively, C^{14}-labeled anthraquinone may be added directly to the aeration units to give a concentration of 0.1 mg/L anthraquinone at the start of each aeration cycle.

(3) One hundred ml of settled sewage are added to the control units, and 95 ml of settled sewage plus 5 ml of the C^{14}-labeled anthraquinone stock solution or suspension (2 mg anthraquinone/1) are added to the test units. If test substance is added directly to aeration units, 100 ml of settled sewage are added, as in the control units.

(ii) *Reporting requirements.* (A) The biodegradability tests in activated sludge systems shall be completed and the final results submitted to the Agency within 1 year of the date of EPA's notification of the test sponsor by certified letter or **Federal Register** notice announcing that the total annual volume of anthraquinone manufactured and imported in the United States during a single calendar year exceeds 3 million pounds and that one or more of the triggers described in paragraph (d)(1)(i) of this section has been met.

(B) A progress report shall be submitted 6 months after EPA's notification of the test sponsor by certified letter or the publication of the **Federal Register** notice announcing that testing is necessary.

(2) *Biodegradation rate*—(i) *Required testing.* Biodegradation rate tests shall be conducted with anthraquinone at concentrations at or below the water solubility as determined under the testing specified in paragraph (c)(1)(i) of this section, and close to the predicted environmental concentration in sediment, i.e., 0.1 ppm, in accordance with the test guideline described in the article by A.W. Bourquin et al. entitled "An Artificial Microbial Ecosystem for Determining Effects and Fate of Toxicants in a Salt-Marsh Environment," if EPA determines that the production/importation volume of anthraquinone in the United States during a single calendar year exceeds 3 million pounds, and any of the following conditions is met: (A) the LC50 of the most sensitive fish species or the EC50 for the daphnid or oyster, as determined by the acute toxicity tests conducted in accordance with paragraphs (c) (2) and (3) of this section respectively, is less than 100 times the predicted environmental concentration (PEC) in water, i.e., less than 500 ppb; (b) the LC50 of *Rhepoxynius* or *Chironomus*, as determined by the sediment toxicity test conducted in accordance with paragraph (c)(4) of this section, is less than 100 times the PEC in sediment, i.e., less than 10 ppm; or (C) the oyster bioconcentration factor, as determined by the oyster bioconcentration test conducted in accordance with paragraph (c)(5) of this section, is greater than 3,000. The A.W. Bourquin et al. article, entitled "An Artificial Microbial Ecosystem for Determining Effects and Fate of Toxicants in a Salt-Marsh Environment" published in *Developments in Industrial Microbiology*, Vol. 18, Chapter 11, 1977, is incorporated by reference and is available for inspection at the Office of the Federal Register, Rm. 8401, 1100 L St., NW., Washington, DC. This incorporation by reference was approved by the Director of the Office of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. This material is incorporated as it exists on the date of approval, and a notice of any change in this material will be published in the **Federal Register**. Copies of the incorporated material may be obtained from the Document Control Officer (TS-793), Office of Toxic Substances, EPA, Rm. NE-G004, 401 M St., SW., Washington, DC 20460, and from the Society for Industrial Microbiology, P.O.B. 12534, Arlington, VA 22209-8534.

(ii) *Reporting requirements.* (A) Biodegradation rate tests shall be completed and the final results submitted to the Agency within 1 year of the date of EPA's notification of the test sponsor by certified letter or a **Federal Register** notice announcing that the total annual volume of anthraquinone manufactured and imported in the United States during a single calendar year exceeds 3 million pounds and that one or more of the triggers described in paragraph (d)(2)(i) of this section has been met.

(B) A progress report shall be submitted 6 months after EPA's notification of the test sponsor by certified letter or the publication of the **Federal Register** notice announcing that testing is necessary.

(3) *Fish chronic toxicity*—(i) *Required testing.* (A) Fish chronic toxicity tests shall be conducted with anthraquinone in accordance with the test guideline specified under § 797.1600 of this chapter, except for paragraph (c)(6)(iv) of § 797.1600, if EPA determines that the production/importation volume of anthraquinone in the United States during a single calendar year exceeds 3 million pounds, and if the most sensitive fish species (with the lowest median lethal concentration (LC50)) in the acute toxicity tests conducted in accordance with paragraph (c)(2) of this section has an LC50 less than 100 times the predicted environmental concentration (PEC) in water, i.e., less than 500 ppb.

(B) For the purpose of this section, the following provisions also apply:

(1) Prior to the addition of the test substance to the dilution water, it is recommended that the test substance stock solution be analyzed to verify the concentration. After addition of the test substance, the total and dissolved (e.g., filtered) concentrations of the test substance shall be measured at the beginning of the test in each test chamber and delivery chamber to ascertain whether it is in solution. The concentration of test substance shall be measured in one replicate at each test concentration at least once a week thereafter. Replicates should be alternated each week. If a malfunction in the delivery system is discovered, water samples shall be taken immediately from the affected test chambers and analyzed.

(2) The highest concentration shall be less than or equal to the solubility limit of anthraquinone.

(3) At least one test concentration shall be between 1 ppb and 10 ppb.

(ii) *Reporting requirements.* (A) Fish chronic toxicity tests shall be completed and the final results submitted to the Agency within 2 years of the date of EPA's notification of the test sponsor by certified letter or a **Federal Register** notice announcing that the total annual volume of anthraquinone manufactured and imported in the United States during a single calendar year exceeds 3 million pounds and that the trigger described in paragraph (d)(3)(i)(A) of this section has been met.

(B) Progress reports shall be submitted at 6-month intervals beginning 6 months after EPA's notification of the test sponsor by certified letter or the publication of the **Federal Register** notice announcing that testing is necessary.

(4) *Daphnid chronic toxicity*—(i) *Required testing.* (A) Daphnid chronic toxicity test shall be conducted with anthraquinone using *Daphnia magna* or *D. pulex* in accordance with the test guideline specified under § 797.1330 of this chapter, except for paragraph (c)(4)(ii) of § 797.1330, if EPA determines that the total annual volume of anthraquinone manufactured and imported in the United States during a single calendar year exceeds 3 million pounds, and the median effective concentration (EC50) determined in accordance with paragraph (c)(3) of this section is less than 100 times the PEC in water, i.e., less than 500 ppb.

(B) For the purposes of this section, the following provisions also apply:

(1) A minimum of 20 daphnids per concentration shall be exposed to five or more concentrations of the substance chosen in a geometric series in which the ratio is between 1.5 and 2.0, (e.g., 2, 4, 8, 16, 32, 64 mg/L). An equal number of daphnids shall be placed in two or

more replicates. The highest concentration shall be less than or equal to the solubility of anthraquinone. At least one concentration shall be between 1 ppb and 10 ppb. Solutions shall be analyzed for chemical concentration prior to use and at designated times during the test.

(2) The pH of the test solution shall be 7.

(3) The total and dissolved (e.g., filtered) concentrations of test substance shall be measured in each test chamber and the delivery chamber before the test to ascertain whether it is in solution.

(4) The test shall be performed under flowthrough conditions;

(5) The stability of the stock solution for the duration of the experiment must be analyzed and reported.

(ii) *Reporting requirements.* (A) The daphnid chronic toxicity test shall be completed and the final results submitted to the Agency within 2 years of the date of EPA's notification of the test sponsor by certified letter or a **Federal Register** notice announcing that the total annual volume of anthraquinone manufactured and imported in the United States during a single calendar year exceeds 3 million pounds and that the trigger described in paragraph (d)(4)(i) of this section has been met.

(B) Progress reports shall be submitted at 6-month intervals beginning 6 months after EPA's notification of the test sponsor by certified letter or the publication of the **Federal Register** notice announcing that the testing is necessary.

(d) *Effective date.* The effective date of this final rule for anthraquinone is July 20, 1987.

(Information collection requirements have been approved by the Office of Management and Budget under control number 2070-0033.)

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GENERAL SERVICES ADMINISTRATION

41 CFR Part 101-40

[FPMR Amdt. G-81]

Transportation and Traffic Management

AGENCY: Federal Supply Service, GSA.

ACTION: Final rule.

SUMMARY: The General Services Administration (GSA) amends 41 CFR Part 101-40 by correcting certain minor technical errors found in FPMR Amendment G-79 (51 FR 24329, July 3, 1986), by updating and correcting certain references to the Code of Federal Regulations (CFR), and by revising the list of GSA regional offices to reflect recent GSA organizational changes. In addition, this amendment announces the revision of GSA Form 3080. This amendment is necessary to provide clearer guidance to civilian executive agencies about transportation and traffic management requirements.

EFFECTIVE DATE: June 4, 1987.

FOR FURTHER INFORMATION CONTACT: Joseph M. Napoli, Regulations and Policy Division, FTS 557-1256 or commercial 703-557-1256.

SUPPLEMENTARY INFORMATION: Section 201(a) of the Federal Property and Administrative Services Act of 1949, as amended (40 U.S.C. 481(a)), details GSA's transportation and traffic management responsibilities which include: (a) Prescribing policies and methods of procurement and supply of personal property and nonpersonal services, including related functions such as transportation and traffic management; (b) representing executive agencies in negotiations with carriers or other public utilities before Federal and State regulatory bodies; and (c) providing traffic management services to any Federal agency upon its request. GSA is responsible, among other things, for providing traffic management guidance to civilian executive agencies.

FPMR Amendment G-79, effective July 3, 1986, was issued to clarify, revise, and update various policies and procedures in the area of transportation and traffic management. Since then, GSA has determined that certain administrative changes in 41 CFR Part 101-40 are necessary to correct several editorial flaws, to update the listing of GSA regional offices reorganized as zone offices, and to address the new GSA Form 3080 which was revised in both title and content to make the form more compatible with the Centralized Household Goods Traffic Management Program (41 CFR Subpart 101-40.2).

GSA has determined that this rule is not a major rule for the purposes of Executive Order 12291 of February 17, 1981, because it is not likely to result in an annual effect on the economy of $100 million or more; a major increase in costs to consumers or others; or significant adverse effects. GSA has based all administrative decisions underlying this rule on adequate information concerning the need for, and the consequences of, this rule; has determined that the potential benefits to society from this rule outweigh the potential costs and has maximized the net benefits; and has chosen the alternative approach involving the least net cost to society.

List of Subjects in 41 CFR Part 101-40

Freight, Government property management, Moving of household goods, Office relocation, Transportation

For the reasons set forth in the preamble, 41 CFR Part 101-40 is amended as follows:

PART 101-40—TRANSPORTATION AND TRAFFIC MANAGEMENT

1. The authority citation for Part 101-40 continues to read as follows:

Authority: Sec. 205(c), 63 Stat. 390 (40 U.S.C. 486(c)).

2. Section 101-40.000 is revised to read as follows:

§ 101-40.000 Scope of part.

This part prescribes regulations that apply to the freight and household goods transportation and traffic management activities of executive agencies, including any wholly owned Government corporation. Except for provisions to debar or suspend carriers in accordance with Subpart 9.4 of the Federal Acquisition Regulation (48 CFR Subpart 9.4), this part does not apply to the Department of Defense or any other executive agency exempted from these regulations pursuant to the Federal Property and Administrative Services Act of 1949, as amended. It also covers arrangements for transportation and related services by bill of lading type commitments. These regulations are designed to ensure that all transportation and traffic management activities will be carried out in a manner (or method) most advantageous to the Government in terms of service, economy, and efficiency.

3. Section 101-40.001 is revised to read as follows:

§ 101-40.001 Definitions.

"GSA Central Office" means the General Services Administration, Federal Supply Service, Office of Customer Support Management, Travel and Transportation Management Division, Washington, DC 20406.

"GSA regional office" means the GSA Traffic and Travel Services Zone Office(s), Federal Supply Service Bureau, specified in § 101-40.101-1(a).

Subpart 101-40.1—General Provisions

4. Section 101-40.101-1 is revised to read as follows: