7.5 mg/kg/day and that this equivocal evidence was associated with irritation due to topical exposure, and not with oral exposure. According to EPA Carcinogenicity Guidelines, paraquat was, therefore, placed in Category E for the oral exposure route. Because paraquat is a restricted-use pesticide and precautionary measure are required to protect applicators from the acute toxicity of the chemical, the potential for oncogenic effects by excessive (irritating) topical exposure is not a concern for applicators.

The pesticide is useful for the purposes for which these tolerances are sought. The nature of the residues in plants and animals is adequately understood for the purpose of establishing the tolerances. Adequate analytical methodology (quantitation by spectrophotometry) is available for enforcement purposes. The method is listed in the Pesticide Analytical Manual (PAM), Vol. II, as method I for crops. Any secondary residues occurring in meat, milk, poultry, and eggs will be covered by existing tolerances on these commodities.

Based on the above information considered by the Agency, the tolerance established by amending 40 CFR part 180 would protect the public health. It is proposed, therefore, that the tolerances be established as set forth below.

Any person who has registered or submitted an application for registration of a pesticide, under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as amended, which contains any of the ingredients listed herein, may request within 30 days after publication of this document in the **Federal Register** that this rulemaking proposal be referred to an Advisory Committee in accordance with section 408(e) of the Federal Food, Drug, and Cosmetic Act.

Interested persons are invited to submit written comments on the proposed regulation. Comments must bear a notation indicating the document control number, [PP 7F1910/P509]. All written comments filed in response to this petition will be available in the Public Information Branch, at the address given above from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

Pursuant to the requirements of the Regulatory Flexibility Act (Pub. L. 96-354, 94 Stat. 1164, 5 U.S.C. 601-612), the Administrator has determined that regulations establishing new tolerances or raising tolerance levels or establishing exemptions from tolerance requirements do not have a significant economic impact on a substantial number of small entities. A certification statement to this effect was published in the **Federal Register** of May 4, 1981 (46 FR 24950).

List of Subjects in 40 CFR Part 180

Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: March 16, 1990.

Anne E. Lindsay,

Director, Registration Division, Office of Pesticide Programs.

Therefore, it is proposed that 40 CFR part 180 be amended as follows:

PART 180—[AMENDED]

1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 346a and 371.

2. In § 180.205(a), by adding and alphabetically inserting entries for the following raw agricultural commodities, to read as follows:

§ 180.205 Paraquat; tolerances for residues.

(a) * * *

Commodities	Parts per million
* * * * *	
Beans, dry	0.3
Bean straw	30.0
* * * * *	

[FR Doc. 90-7078 Filed 3-27-90; 8:45 am]

BILLING CODE 6560-50-D

40 CFR Part 799

[OPTS-42114; FRL 3712-9]

N-Methylpyrrolidone; Proposed Test Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: EPA is proposing a test rule under section 4 of the Toxic Substances Control Act (TSCA) that would require manufacturers and processors of *N*-methylpyrrolidone (NMP) (CAS No. 872-50-4) to test NMP for oncogenicity, mutagenicity, developmental toxicity, reproductive toxicity, neurotoxicity, subchronic toxicity, and pharmacokinetics. This proposed rule is being issued in support of the Consumer Product Safety Commission's (CPSC) need for health effects data on this substance. CPSC regularly reviews chemicals that may be used as substitutes for essential yet dangerous chemicals found in consumer goods. NMP is being reviewed because of its use as a substitute for methylene chloride in paint strippers.

DATES: Submit written comments on or before May 29, 1990. If persons request an opportunity to submit oral comments by May 15, 1990, EPA will hold a public meeting on this rule in Washington, DC. For further information on arranging to speak at the meeting, see Unit VIII. of this preamble.

ADDRESS: Submit written comments identified by the document control number (OPTS-42114) in triplicate to: TSCA Public Docket Office (TS-793), Office of Pesticides and Toxic Substances, Environmental Protection Agency, Rm. NE-G004, 401 M St., SW., Washington, DC 20460.

A public version of the rulemaking record supporting this action is available for inspection at the above address from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays.

FOR FURTHER INFORMATION CONTACT: Michael M. Stahl, Director, Environmental Assistance Division (TS-799), Office of Toxic Substances, Rm. E-543B, 401 M St., SW., Washington, DC 20460, (202) 554-1404, TDD (202) 554-0551.

SUPPLEMENTARY INFORMATION: EPA is issuing a proposed test rule under section 4(a) of TSCA for health effects testing of NMP.

I. Introduction

A. Background

Section 4 of TSCA authorizes EPA to require testing of chemical substances and mixtures whose manufacture, processing, distribution in commerce, and use may present an unreasonable risk to human health or the environment, or which are produced in substantial quantities and may result in significant or substantial human exposure, if existing data are inadequate to reasonably determine the effects on human health. The health effects data obtained as a result of this rule would allow CPSC and EPA to determine if NMP does or does not present an unreasonable risk to human health if utilized as a substitute for methylene chloride. CPSC and EPA are aware that other pyrrolidones may be substituted for NMP, and it may be necessary to initiate separate rulemakings for these and other methylene chloride substitutes.

B. Test Rule Development under TSCA

Under section 4(a) of TSCA, EPA shall by rule require testing of a chemical to develop appropriate test data if the Administrator makes certain findings as described in TSCA under section 4(a)(1)(A) or (B). Discussions of the statutory section 4 findings are provided in EPA's first and second proposed test rules which were published in the Federal Register of July 18, 1980 (45 FR 48510) and June 5, 1981 (46 FR 30300).

In evaluating the testing requirements for NMP, EPA considered the specific testing needs requested by CPSC in addition to all available published and unpublished information on the production volume, use, exposure, and toxicity of this chemical. From its evaluation of these data, EPA is proposing specific health effects testing for NMP.

II. Review of Available Data

A. Profile

NMP is a colorless liquid with a mild amine odor; it has a molecular weight of 99.132 daltons and is infinitely soluble in water. NMP has a vapor pressure of 0.334 mm Hg at 25°C, a flash point of 95°C, and a boiling point of 202°C at 760 mm Hg (Ref. 1).

B. Production

NMP is currently produced in the US by two manufacturers at three plant sites: BASF Wyandotte Corporation (BASF) in Geismar, LA and GAF Corporation (GAF) in Calvert City, KY and Texas City, TX (Ref. 1). Public documents estimate 1989 production of NMP at 55 million pounds with annual market growth rates of 4 to 5 percent (Ref. 2). The sole importer of NMP is the Mitsubishi Corporation (Ref. 2). Known processors are listed in References 2 and 19.

C. Uses

NMP is an inert, stable, polar solvent that is used in a wide variety of processes. Its commercial uses result from its strong and frequently selective solvent power. In recent years, NMP has replaced other solvents of poorer stability, greater volatility, or better defined or known toxicity. One of the major uses of NMP is the extraction of aromatics from lubricating oils. It is also used as a medium for polymerization and as a solvent for finished polymers. It is the preferred solvent in a variety of chemical reactions and in the manufacture of numerous chemical intermediates and end products such as plastics, surface coatings, and pesticides. An important new use of this chemical is as a substitute for methylene chloride in paint strippers. NMP is also used in the recovery and purification of acetylenes, olefins, and diolefins, in the removal of sulfur compounds from natural and refinery gases, and in the dehydration of natural gas (Ref. 1).

D. Human Exposure

1. *Occupational.* The 1983 National Occupational Exposure Survey (NOES), conducted by the National Institute for Occupational Safety and Health (NIOSH), reports that over 71,000 US employees are potentially exposed to NMP in all uses at 3,527 plants (Ref. 5). Of this total, it has been estimated that over 19,000 are female. The National Occupational Hazard Survey (NOHS) reports that over 25,000 employees are exposed to NMP in all uses at 2,450 facilities (Ref. 5). It is estimated that 13 percent of all exposures result from exposure to the chemical during its manufacture, while an estimated 87 percent of all exposures result from exposure to trade name products which contain NMP.

Approximately 9 to 11 percent of the production volume of NMP is used for paint stripping and 2,200 to 7,800 workers at 220 to 380 facilities are reportedly exposed (Ref. 5). Dermal exposure is estimated to be between 300 to 1,000 mg/day, while inhalation exposure during various stripping applications including automotive, aircraft, military, furniture refinishing, and other specialty applications is estimated to range from approximately 0.2 to 12,000 mg/year depending on the job description (Ref. 5).

2. *Consumer.* NMP is estimated to be used in 10 percent of the paint strippers market, and an estimated 2.7 million consumers are currently exposed to NMP as a component in paint strippers (Ref. 6). As the market share for NMP increases, the number of consumers potentially exposed will also increase. EPA has estimated typical and heavy user exposure scenarios for low and high ventilation rates (Ref. 6). Estimated inhalation exposure for typical users under low ventilation is approximately 12,000 mg/year, while exposure under high ventilation is reduced to approximately 6,000 mg/year. Estimated inhalation exposure for heavy users under low ventilation is approximately 35,000 mg/year, while exposure under high ventilation is reduced to 18,000 mg/year. Dermal exposure for typical users is approximately 300 mg/year and dermal exposure for heavy users is approximately 1,000 mg/year. Consumer exposure estimates can vary greatly with changes in the assumptions used for the calculations. Exposure to NMP in paint strippers is a range of values depending on factors such as ventilation, application method, rate of NMP release to air, duration, and amount of stripper used.

E. Health Effects

1. *Oncogenicity.* The oncogenic potential of NMP was investigated by Lee in a 2-year inhalation study in rats (Ref. 7). No carcinogenicity data were presented in the report. However, it was summarized that a slightly greater incidence of pituitary tumors was found in both male and female rats at the low dose, but not at the high dose; female rats at the low dose exhibited a decreased incidence of mammary gland tumors and an increased incidence of mammary gland hyperplasia. The study is deemed inadequate for the evaluation of the oncogenic potential of NMP since: (1) Only one animal species was used; (2) the maximum tolerated dose might not have been reached; (3) detailed carcinogenicity data were not reported.

2. *Mutagenicity.* Wells (Ref. 8), Mortelmans (Ref. 9), and BASF (Ref. 10) reported that NMP was not mutagenic at various dose levels, in several *Salmonella* strains, with and without metabolic activation in the Ames *Salmonella*/ microsome assay.

BASF conducted a dominant lethal assay and chromosomal aberrations study (Ref. 11). Although BASF reported negative results in both studies, sufficient information on study methods and results were not provided and study adequacy could not be evaluated by EPA.

3. *Developmental toxicity.* Becci administered NMP dermally to rats during days 6 through 15 of gestation (Ref. 12). This study establishes both a lowest observed adverse effect level (LOAEL) and a no observed adverse effect level (NOAEL) of 750 mg/kg/day and 237 mg/kg/day, respectively, for rats for both maternal and developmental toxicity. Resorptions increased and fetal body weight decreased at the LOAEL. In addition, skeletal anomalies including missing sternebrae, fused/split/extra ribs, incomplete closing of the skull, incomplete ossification of vertebrae, fused atlas and occipital bones, and reduced or incomplete hyoid bone were observed at this dose.

Schmidt (Ref. 13) administered NMP in mice via intraperitoneal injection. He observed an increase in post-implantation loss and a reduction in the body weight of treated fetuses in addition to morphological defects including: exencephaly, open eyelids, microphthalmia, cleft palate, oligodactyly, shortened or kinked tails,

fusion and curvature of neck and chest vertebrae, and fusion of sternebrae and ribs. No data were provided on the maternal animals for either strain; thus, maternal toxicity is unknown. The study did not cover the major period of organogenesis (days 6 through 15) and insufficient doses were tested to establish a dose-response relationship.

BASF (Ref. 14) and Lee (Ref. 7) conducted developmental toxicity tests in rats and mice by various routes of administration. Although fetal malformations and developmental effects were noted in their results, each of the studies had inherent flaws.

Results of the Lee study were compromised because there was an aberrantly low number of corpora lutea in the animals of the low dose group. Because of the low number of corpora lutea/litter, values for resorptions/litter and mean fetal weight are misleading.

The methods used in the studies by BASF departed from EPA guidelines on many points which compromised the results. The most significant problems are: (1) No vehicle control group was used; (2) only two doses were used to establish a dose-response relationship; (3) the dose period did not cover the major portion of organogenesis; (4) maternal weights were not recorded; (5) there was no examination for internal, soft-tissue abnormalities and only limited summarized data were presented; thus, no statistical analysis could be performed.

4. *Reproductive toxicity.* No data were available on the reproductive toxicity of NMP.

5. *Neurotoxicity.* No data were available on the neurotoxicity of NMP.

6. *Subchronic toxicity.* GAF evaluated the subchronic effects of NMP in feeding studies in rats and mice (Ref. 15). Although GAF reported no treatment related histopathological or pathological effects, sufficient information on study methods and results was not provided and study adequacy could not be evaluated by EPA.

Becci administered NMP in the diet of Beagle dogs (Ref. 16). In male dogs, an apparent increase in megakaryocytes in the sternal marrow was observed with increased dose.

Lee evaluated toxicity by inhalation in rats exposed to an aerosol-vapor mixture of NMP (Ref. 7). Rats experienced excessive mortality and extreme respiratory difficulty at the high dose. Exposure was discontinued after 10 days. Focal pneumonia, bone marrow hypoplasia, atrophy of spleen and thymus lymphoid tissues, an increase in neutrophils, and a relative decrease in lymphocytes were observed. Clinical observations included lethargy and respiratory difficulty in all treated groups.

BASF and GAF conducted several subacute toxicity studies. No treatment-related pathological and/or histopathological abnormalities were reported (Ref. 1). Sufficient information on study methods and results were not provided and study adequacy could not be evaluated by EPA.

7. *Acute toxicity.* Acute toxicity data on NMP are summarized in the support document for this rulemaking. For more details on acute toxicity, see Reference 1.

8. *Pharmacokinetics.* Wells and Digenis (Ref. 18) observed rapid distribution of radiolabeled NMP in rats following intravenous administration. There was a significant decline in plasma levels after the first 30 minutes. Metabolites were measured approximately 4 hours after dosing. After 6 hours, the highest accumulation of radioactivity occurred in the liver and intestines although the thymus and bladder had the largest concentrations when expressed on a per gram of tissue basis. Elimination was predominately via the urine, but there was some elimination via the feces. The acid hydrolysis product of one of the three identified metabolites, 4-(methylamino)butanoic acid, accounted for 70 percent of the radiolabel excreted in urine.

III. Findings

Although findings under either sections 4(a)(1)(A) or (B) may independently support testing, EPA is proposing the testing of NMP under section 4(a)(1)(A) and (B) of TSCA.

Under section 4(a)(1)(B)(i), EPA finds that NMP is produced in substantial quantities and that there may be substantial human exposure to NMP during its manufacture, processing, and use.

Total imports and domestic annual production of NMP are in excess of 55 million pounds per year (Ref. 2). EPA finds that this amount is substantial as that term is used in TSCA section 4(a)(1)(B). An estimated 2.7 million consumers may be exposed to NMP when used in paint strippers as a methylene chloride substitute. An estimated 71,000 workers may be routinely exposed to NMP or products containing NMP during manufacture and processing and more than 19,000 of these workers are female (Ref. 5). EPA finds that the number of people who may be exposed to NMP is substantial as that term is used in TSCA section 4(a)(1)(B).

Under section 4(a)(1)(A)(i), EPA finds that the manufacture, processing, and use of NMP may present an unreasonable risk of injury to human health due to its potential to cause developmental and subchronic toxicity. The basis for the finding that NMP may cause developmental effects is presented in Unit II.E. and in References 12, 13, and 14, while the basis for the finding that NMP may cause subchronic toxicity is presented in Unit II.E. and in References 7, 15, and 16. Exposure to NMP is described in Unit II.D. and in References 5 and 6.

The finding that NMP may pose developmental toxicity is based upon a TSCA section 8(e) notice (Ref. 14). On October 23, 1987, mouse and rat teratology studies and a published developmental toxicity study were submitted. Additional information submitted on November 17, 1987, includes a summary of BASF's position on prenatal toxicity, summaries of two additional developmental toxicity studies of NMP, and summaries of developmental toxicity studies on pyrrolidone. Data in these reports suggest that NMP may cause developmental toxicity (Ref. 22).

The finding that NMP may pose subchronic toxicity is based on a 4-week inhalation study in rats providing evidence that NMP may have an effect on blood following subchronic exposure. Rats exposed to 1 mg/L (aerosols) for only 10 days showed depletion of hematopoietic cells in the bone marrow and atrophy of the lymphoid tissues of the thymus, spleen, and lymph nodes (Ref. 7). Refer to Unit II.E. and References 15 and 16 for additional details supporting this finding for subchronic toxicity.

The findings for the above potential health effects under section 4(a)(1)(A)(i), and the potential substantial human exposure, support EPA's concern that the manufacturing, processing, and use of NMP may present an unreasonable risk of injury to human health.

Under section 4(a)(1)(A)(ii) and (B)(ii), EPA finds that there are insufficient data and experience from which the potential health risks from manufacturing, processing, and use of NMP can reasonably be determined or predicted. The oncogenic potential of NMP was investigated by Lee in a 2-year inhalation study in rats (Ref. 7). However, the study appears to be inadequate for the evaluation of the oncogenicity of NMP (Ref. 20). EPA's risk assessment guidelines for oncogenicity state that a 2-year cancer bioassay in two species is necessary for risk assessment. A negative 2-year bioassay in one species is not adequate to eliminate a concern for the oncogenic

potential of a chemical. If the complete study by Lee is submitted to EPA before the final rulemaking and found adequate, then one additional bioassay in a different species would be necessary. If this complete rat study is not submitted to EPA or if it is submitted before the final rulemaking and found inadequate, then a two-species bioassay would be necessary.

Mutagenic effects of NMP were evaluated by BASF in a dominant lethal assay and a chromosomal aberration study. Although BASF reported negative results in both studies, sufficient information on study methods and results were not provided and study adequacy could not be evaluated by EPA (Ref. 21). If the complete study is not submitted to EPA or if it is submitted before the final rulemaking and found inadequate, then the studies would be required to be conducted according to EPA test guidelines and Good Laboratory Practice Standards (GLP).

Becci established the LOAEL and NOAEL for developmental and maternal toxicity in the rat (Ref. 12). However, the EPA guidelines require adequate developmental toxicity data on at least two mammalian species to perform risk assessments for developmental toxicity on NMP. Schmidt's study in the mouse is inadequate for risk assessment because none of the dosing regimens for the study included dosing at three different levels during gestation days 6 through 15 (Ref. 13). Other studies conducted by Lee and BASF on the developmental toxicity of NMP and submitted in the TSCA section 8(e) notice (Ref. 14) are inadequate for the reasons described in Unit II.E.

Lee evaluated the subchronic effects of NMP in an inhalation study in rats. However, EPA believes this study is inadequate for risk assessment (Ref. 17). Other subchronic toxicity studies that have been conducted are inadequate for reasons described in Unit II.E.

Wells and Digenis administered NMP in rats intravenously to study its distribution, metabolism, and elimination (Ref. 18). The intravenous route is required in the EPA pharmacokinetics test guideline. However, the intravenous portion of the test needs to be conducted concurrently with the dermal, oral, and inhalation routes because it provides a reference point (i.e., 100 percent Absorption) for the study. No data are available for dermal, oral, or inhalation routes. Therefore, an additional intravenous administration would be necessary to provide a reference point for these other routes.

No data are available on the reproductive toxicity or neurotoxicity of NMP. Therefore, EPA cannot evaluate NMP's potential reproductive or neurotoxic effects.

Under section 4(a)(1)(A)(iii) and (B)(iii), EPA finds that testing of NMP is necessary to develop such data for oncogenicity, mutagenicity, developmental toxicity, reproductive toxicity, neurotoxicity, subchronic toxicity, and pharmacokinetics. Once EPA makes the finding in either section 4(a)(1)(A)(i) or (B)(i), EPA may require any health effects testing for which EPA finds that there are insufficient data and for which testing is necessary to determine whether the substance presents or does not present an unreasonable risk to human health or the environment. EPA believes the data resulting from the proposed testing will be relevant to a determination as to whether manufacturing, processing, and use of NMP does or does not present an unreasonable risk of injury to human health. As noted, studies have been conducted on the mutagenicity and oncogenicity of NMP that have only been provided in summary form. These data may be submitted to EPA in response to this proposed rule. If EPA determines these studies are adequate, then the final test requirements for NMP would be modified accordingly.

Because of the above concerns for oncogenicity, mutagenicity, developmental toxicity, reproductive toxicity, subchronic toxicity, and neurotoxicity for the described exposures to NMP, EPA finds that pharmacokinetics test data are necessary. Ultimately, the purpose for generating pharmacokinetics data is for use in risk assessment. Such applications offer a means for making extrapolations of toxicologic data from species to species, from route to route of administration, and from high to low doses. Dose selections for the chronic toxicity studies would be improved by prior knowledge of the extent of absorption by the routes of administration to be used. In addition, data would be used to detect major differences between sexes relative to the processes of absorption, tissue distribution, biotransformation, and excretion. These data would also determine whether the extent of metabolism is modified by different routes of administration of the test substance or by repeated dosing.

IV. Proposed Rule

A. Proposed Testing and Test Standards

EPA is proposing that testing be conducted in accordance with TSCA GLP Standards (40 CFR part 792). The tests would be conducted according to specific test guidelines set forth in 40 CFR part 798 and other published tests would be conducted according to specific test guidelines set forth in 40 CFR part 798 and other published test methods as specified in this test rule for NMP and identified in the following table.

The pharmacokinetics test standards and reporting requirements are not being proposed at this time. Rather, EPA has decided to await publication of its generic pharmacokinetics test guideline. EPA plans to publish this generic guideline in the near future. Shortly after its publication, EPA also plans to propose in a separate **Federal Register** notice that pharmacokinetics testing of NMP be conducted according to this generic guideline with any chemical specific modifications to this guideline applicable to NMP. Reporting requirements for this test will concurrently be proposed.

PROPOSED TESTING, TEST STANDARDS AND REPORTING REQUIREMENTS FOR NMP

Test	Test Standard (40 CFR citation)	Reporting Deadline for Final Report[1]	Interim Reports (6 month Required)
Health Effects:			
Oncogenicity: Inhalation	798.3300	53	8
Mammalian cells in culture	798.5300	10	1
Drosophilag sex-linked recessive lethal test[2]	798.5275	22	1
Mouse visible specific locus or mouse biochemical specific locus test[2]	798.5200	51	8
	798.5195		
In vitro cytogenetics test	798.5375	10	1

PROPOSED TESTING, TEST STANDARDS AND REPORTING REQUIREMENTS FOR NMP—Continued

Test	Test Standard (40 CFR citation)	Reporting Deadline for Final Report[1]	Interim Reports (6 month Required)
In vivo cytogenetics test:			
Chromosomal analysis or micronucleus assay	798.5365		
	798.5395	24	2
Rodent dominant lethal[2]	798.5450	36	[4]/1
Heritable translocation[2]	798.5460	[3]25	4
Developmental toxicity: Oral	798.4900	12	1
Reproductive toxicity: Oral	798.4700	29	4
Functional observational battery: Acute and subchronic inhalation	798.6050	21	3
Motor activity test: Acute and subchronic inhalation	798.6200	21	3
Neuropathology: Subchronic inhalation	798.6400	21	3
Subchronic: Inhalation	798.2450	15	2
Pharmacokinetics	Deferred		

[1] Number of months after the effective date of the final rule, except as indicated.
[2] Following Agency review of all existing data for NMP, EPA has determined that the proposed testing would be performed.
[3] Figure indicates the reporting deadline calculated from the date of test sponsor notification by certified letter or FEDERAL REGISTER notice to initiate test.
[4] The mouse biochemical specific locus test was proposed on December 23, 1987 (53 FR 51847) as an alternative to the mouse visible specific locus test for all section 4 rules and is proposed for testing on NMP.
[5] Four progress reports will be required for the rodent dominant lethal test if the result of the in vitro cytogenetics test is positive; one report will be required if the result of the in vivo cytogenetics test is positive.

The following conditions also apply to the proposed test standards:

1. *Mutagenicity.* If the result of the mammalian cells in culture test is positive, a Drosophila sex-linked recessive lethal test (SLRL) would be conducted by the inhalation route. Three dose levels would be required and duration of exposure would be for one 24-hour time period. A positive result in the SLRL test would trigger a mouse visible specific locus (MVSL) or mouse biochemical specific locus (MBSL) test which would be conducted by the inhalation route. Two dose levels would be tested and exposure would be for 6 hours per day. Duration of exposure would be dependent upon accumulated total dose desired for each group. The MBSL was proposed in 53 FR 51847 (December 23, 1987) as an alternative to the MVSL for all section 4 rules and is proposed for testing on NMP. If the SLRL test is negative, the MVSL or MBSL test would not be required.

If the result of the in vitro mammalian cytogenetics test is positive, a dominant lethal test would be required by the inhalation route. Three dose levels would be used with the highest dose, or highest dose attainable, producing signs of toxicity. Duration of exposure would be for 6 hours per day for 5 days. A positive result in the dominant lethal test would trigger a heritable translocation test by the inhalation route.

If the in vitro cytogenetics test is negative, the in vivo cytogenetics test would be required. The in vivo cytogenetics test would be administered by intraperitoneal injection since this is the most applicable route to identify genetic effects for NMP. Should the in vivo cytogenetics test results prove negative, no further chromosomal aberrations testing would be required. A positive result in the in vivo cytogenetics test would trigger the dominant lethal test; and again, if the dominant lethal test is positive, a heritable translocation test would be conducted.

EPA believes that the MVSL/MBSL and/or heritable translocation tests are necessary when the SLRL and/or dominant lethal assays are positive to establish definitively whether a substance is capable of eliciting heritable mutagenic effects. Under the approach proposed, EPA would consider the positive results in the lower-tier tests in a public program review, together with other relevant information, during which interested persons would be able to give their views to EPA. If, after the review, EPA determined that the MVSL or MBSL and/or the heritable translocation test(s) were still appropriate, EPA would notify the test sponsors by letter or Federal Register notice that they must conduct the test(s). If EPA determined that the test(s) were no longer necessary, EPA would propose to amend the rule to delete the test requirement.

For a more detailed discussion concerning mutagenicity tiered testing and program review, see the final test rule for the C9 aromatic hydrocarbon fraction (50 FR 20662; May 17, 1985).

2. *Developmental toxicity.* The developmental toxicity test would be required in a mammalian species other than the rat. A satellite group in rats, mice, hamsters, or rabbits would also be required to test for NMP transport across the placenta.

3. *Neurotoxicity.* Duration of exposure for acute testing would be for 6 hours per day for 1 day; duration of exposure for subchronic testing would be for 6 hours per day 5 days per week for 90 days.

B. Test Substance

EPA is proposing that NMP of at least 99.5 percent purity be used as the test substance because EPA is interested in evaluating the effects attributable to NMP itself. EPA believes that this grade of NMP is readily available.

C. Persons Required to Test

Because of the findings in Unit III, EPA is proposing that persons who manufacture (including import) and/or process, or who intend to manufacture and/or process NMP, other than as an impurity, at any time from the effective date of the final test rule to the end of the reimbursement period be subject to the testing requirements in this proposed rule. Byproduct manufacturers and importers of NMP are considered manufacturers under this rule. As explained in 40 CFR part 790, initially manufacturers but not processors of NMP would be required to submit letters of intent or exemption applications.

EPA is not proposing to require the submission of equivalence data as a condition for exemption from the proposed testing for NMP. EPA is interested in evaluating the effects attributable to NMP itself and has specified a relatively pure substance for testing.

D. Reporting Requirements

As required in 40 CFR 799.10, all data developed under the final rule would be reported in accordance with its TSCA GLP Standards which appear in 40 CFR part 792. In addition, 40 CFR part 790

requires test sponsors to submit individual study plans at least 45 days prior to the initiation of each study. Recently, EPA issued a proposed rule (54 FR 21237; May 17, 1989) which would amend the procedural rule found at 40 CFR part 790. One of the modifications included in this rule would eliminate the requirement to submit study plans as required above unless specified in a particular test rule or consent order. The comment period for this proposed rule closed on June 16, 1989. If this proposed action is promulgated, it would apply to this rule.

V. Issues for Comment

1. This proposed rule specifies TSCA test guidelines with minor modifications as the test standards for health effects testing of NMP. EPA is soliciting comments as to whether these test guidelines are appropriate and adequate to characterize the health effects of NMP.

2. EPA requests comments on the route of exposure for testing. EPA is proposing that testing be conducted primarily by the oral and inhalation routes. NMP's low volatility makes the oral route the most applicable method. Because of NMP's use in paint strippers, however, inhalation is a major route of exposure. EPA noted that the oncogenicity study by BASF was conducted by inhalation with aerosol and vapor. EPA requests comment on the effect of NMP's low volatility in relation to high test dose concentrations and achievement of a maximum tolerated dose.

3. A number of acute, subacute, subchronic, and developmental toxicity studies, and a rat oncogenicity study have been conducted. Only brief summaries have been provided to CPSC and EPA. EPA solicits the submission of these studies and data during the comment period.

4. Because consumers use NMP in the home, vulnerable populations including babies, children, men and women of reproductive ages, senior citizens, and health impaired individuals may be exposed. Also, because of substantial worker and consumer exposure to NMP, EPA believes exposure to NMP is significant and solicits comment.

5. EPA is proposing that pharmacokinetics testing be conducted with NMP, but has deferred proposing test standards and reporting requirements until the publication of the EPA generic pharmacokinetics test guideline. However, EPA requests comment on tiering sections of the pharmacokinetics study based on final test results for health effects testing.

VI. Economic Analysis of the Proposed Rule

EPA has prepared an economic analysis that evaluates the potential for significant economic impacts on industry as a result of the proposed testing (Ref. 2). The economic analysis estimates the costs of conducting the required testing and evaluates the potential for significant adverse economic impacts as a result of these test costs by examining four market characteristics of NMP: (1) Price sensitivity of demand; (2) market expectations; (3) industry cost characteristics; and (4) industry structure.

Total testing costs for the proposed testing of NMP are estimated to range from $2.6 to $3.6 million. 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 to finance the testing expenditure in the first year.

The annualized test costs, using a 7 percent cost of capital over a period of 15 years, range from $288,000 to $399,000. Based on 1989 production of 55 million pounds, the annualized test cost per pound range from $0.0052 to $0.0072. Thus, the increase in NMP price due to the testing will be less than 1 cent per pound. These costs are less than 1 percent (0.33 to 0.48 percent) of the current price of $1.59 per pound.

EPA believes that the potential for adverse economic impact resulting from the costs of testing is low. This conclusion is based on the following observations: (1) The annualized cost of testing is very low at approximately 0.48 percent of product prices in the upper bound case; and (2) demand for NMP does not appear to be sensitive to a price increase in this range.

For a complete discussion of test cost estimation and potential for economic impact resulting from these costs, refer to the economic analysis which is contained in the public record for this rulemaking (Ref. 2).

VII. Availability of Test Facilities and Personnel

As required by section 4(b)(1) of TSCA, EPA determined that there will be available test facilities and personnel to perform the testing specified in this proposed rule (Ref. 4). Copies of the study, Chemical Testing Industry: Profile of Toxicological Testing, can be obtained through the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 (PB 82-140773). A copy of this study is contained in the rulemaking record for this proposed rule.

VIII. Public Meeting

If requests for oral comments are submitted, EPA will hold a public meeting in Washington, DC after the close of the public comment period. Persons who wish to attend or to present comments at the meeting should call Mary Lou Hewlett, Test Rules Development Branch (202) 475-8162 by May 14, 1990. The meetings are open to the public, but active participation will be limited to EPA representatives and those who requested to comment. Participants are requested to submit copies of their statements by the meeting date. These statements and a transcript of the meeting will become part of EPA's rulemaking record.

IX. Comments Containing Confidential Business Information

All comments will be placed in the public file unless they are clearly labeled as Confidential Business Information (CBI) when they are submitted. While a part of the record, CBI comments will be treated in accordance with 40 CFR part 2. A sanitized version of all CBI comments should be submitted to EPA for the public file.

X. Rulemaking Record

EPA has established a record for this rulemaking (docket number OPTS-42114). This record contains the basic information considered by EPA in developing this proposal and appropriate **Federal Register** notices. EPA will supplement this record as necessary.

A public version of the record, from which all CBI has been deleted, is available for inspection in the TSCA Public Docket Office, Room, Rm. G-004, NE Mall, 401 M St., SW., Washington, DC 20460, from 8 am to 4 pm, Monday through Friday, except legal holidays.

The record includes the following information:

A. Supporting Documentation

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

(a) Notice of final rule on EPA's TSCA Good Laboratory Practice Standards (48 FR 53922; November 29, 1983).

(b) Notice of final rule on data reimbursement policy and procedures (48 FR 31786; July 11, 1983).

(2) TSCA test guidelines cited as test standards for this rule.

(3) Communications before proposal consisting of:

(a) Contact reports of telephone conversations.

(b) Meeting summaries.

(4) Reports--published and unpublished factual materials including: Chemical Testing Industry, Profile of Toxicological Testing (October, 1981).

(5) Data received under section 8(e) of TSCA.

B. References

(1) Syracuse Research Corporation. "Executive Summary of Data on *N*-methylpyrrolidone," Syracuse, NY. (November 15, 1986).

(2) USEPA. "Economic Impact Analysis of Proposed Test Rule *N*-methylpyrrolidone, Non-Confidential version." Washington, DC. (April 13, 1989).

(3) [Reserved]

(4) USEPA. Evaluation of TSCA test guidelines for neurotoxicity testing. Mathtech, Inc. Contract number 68-02-4235. Regulatory Impact Branch, Office of Toxic Substances, Washington, DC. (April 14, 1987).

(5) USEPA. Exposure assessment for NMP in paint strippers. Intra-agency memorandum. E. Jackson to R. Jones. Office of Toxic Substances. Washington, DC. (November 1, 1989).

(6) USEPA. Consumer exposure assessment for NMP in paint strippers. Intra-agency memorandum. P. Kennedy to B. Jones. Office of Toxic Substances. Washington, DC. (July 11, 1989).

(7) Lee, K. P., Chromey, N. C., Culik, R., Barnes, J. R., and Schneider, P. W. "Toxicity of *N*-methyl-2-pyrrolidone: Teratogenic, subchronic, and two-year inhalation studies." *Fundamentals of Applied Toxicology*, 9(2): 222-235 (1987).

(8) Wells, D. A., Thomas, H. F. and Digenis, G. A. "Mutagenicity and cytotoxicity of *N*-methyl-2-pyrrolidone and 4-(methylamino)butanoic acid in the *Salmonella*/microsome assay." *Journal of Applied Toxicology*, 8(2):135-139 (1988).

(9) Mortelmans K., Haworth, S., Lawlor, T., Speck, W., Tainer, B. and Zieger, E. "*Salmonella* mutagenicity tests: II. Results from the testing of 270 chemicals." *Environmental Mutagenesis*, 8(7):1-119 (1986).

(10) BASF. Report on the testing of *N*-methylpyrrolidone for mutagenic effects on male mice after single intra-peritoneal application. West Germany: BASF, (1976). (English Summary).

(11) BASF. Report on the testing of *N*-methylpyrrolidone for mutagenic effects on Chinese Striped Hamsters after 6 weeks of inhalation. West Germany: BASF, (1976). (English Summary).

(12) Becci, P. J., Knickerbocker, M. J., Reagan, E. L., Parent, R. A. and Burnette, L. W. "Teratogenicity study of *N*-methylpyrrolidone after dermal application to Sprague-Dawley rats." *Fundamentals of Applied Toxicology*, 2(2):73-76 (1982).

(13) Schmidt, R. "Experimental animal investigations on the embryotoxic and teratogenic effect of *N*-methylpyrrolidone." *Biologische Rundschau*, 14(1):38-41 (1978). (German; English translation).

(14) TSCA Section 8(e) submission. Submitted to EPA by Ciba-Geigy Corporation. Submission No. 8EHQ-1067-0695. October 23, 1987.

(15) GAF. Letter from J. Ansell, GAF, to the Consumer Product Safety Commission, Washington, DC. (November 18, 1986).

(16) Becci, P. J., Gephart, L. A., Koschier, F. J., Johnson, W. D. and Burnette, L. W. "Subchronic feeding study in Beagle dogs of *N*-methylpyrrolidone." Journal of Applied Toxicology, 3(2):83-86 (1983).

(17) USEPA. Data adequacy for section 4 subchronic toxicity on NMP. Intra-agency memorandum. A. Clevenger to B. Jones. Office of Toxic Substances. Washington, DC. (July 7, 1989).

(18) Wells, D. A. and Digenis, G. A. "Disposition and metabolism of double-labeled (tritium and carbon-14) *N*-methyl-2-pyrrolidone in the rat." Drug Metabolism Disposition, 16(2):243-249 (1988).

(19) USEPA. Production exposure profile on *N*-methyl-2-pyrrolidone. Report prepared by Donna Ozolins. Economics and Technology Division, Office of Toxic Substances, Washington, DC. (February 17, 1988).

(20) USEPA. Testing evaluation of NMP for oncogenic effects. Intra-agency memorandum. D. Lai to R. Jones. Office of Toxic Substances. Washington, DC. (July 7, 1989).

(21) USEPA. Data adequacy for section 4 mutagenicity testing on NMP. Intra-agency memorandum. M. Cimino to R. Jones. Office of Toxic Substances. Washington, DC. (July 7, 1989).

(22) USEPA. Data adequacy for developmental toxicity testing on NMP. Intra-agency memorandum. J. Seed to B. Jones. Office of Toxic Substances. Washington, DC. (June 30, 1989).

XI. Other Regulatory Requirements

A. Executive Order 12291

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

This proposed rule 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 (5 U.S.C. 601 et seq., Pub. L. 96-354, September 19, 1980), EPA is certifying that this test rule, if promulgated, would not have a significant impact on a substantial number of small businesses because: (1) They would not be expected to perform testing themselves or to participate in the organization of the testing effort; (2) they would experience only very minor costs, if any, in securing exemption from testing requirements; and (3) they are unlikely to be affected by reimbursement requirements.

C. Paperwork Reduction Act

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

Public reporting burden for this collection of information is estimated to average 5,300 hours per response, the estimates include time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., SW., Washington, DC 20460; and to OMB, Paperwork Reduction Project (2070-0033), Washington, DC 20503. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

List of Subjects in 40 CFR Part 799

Chemicals, Chemical Export, Environmental protection, Hazardous substances, Reporting and recordkeeping requirements, Testing.

Dated: March 17, 1990.

Linda J. Fisher,

Assistant Administrator for Pesticides and Toxic Substances.

Therefore, it is proposed that 40 CFR, chapter I, subchapter R, part 799 be amended as follows:

PART 799—[AMENDED]

1. The authority citation for part 799 would continue to read as follows:

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

2. By adding § 799.2900 to read as follows:

§ 799.2900 N-Methylpyrrolidone

(a) *Identification of test substance.* (1) *N*-methylpyrrolidone (CAS No. 872-50-4) shall be tested in accordance with this section.

(2) NMP of at least 99.5 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 (including import) or process or intend to manufacture or process NMP, including persons who manufacture or process or intend to manufacture or process NMP as a byproduct, or who import or intend to import products which contain NMP, after the date specified in paragraph (e)(1) of this section to the end of the reimbursement period, shall submit letters of intent to conduct testing, submit study plans, conduct tests and submit data, or submit exemption applications, as specified in this section, subpart A of this part, and parts 790 and 792 of this chapter for single-phase rulemaking. Persons who manufacture, import, or process NMP only as an impurity are not subject to these requirements.

(c) *Health effects testing*—(1) *Oncogenicity*— (i) *Required testing.* (A) Oncogenicity testing shall be conducted in the rat and in the mouse in accordance with § 798.3300 of this chapter except for the provision in paragraph (b)(6) in § 798.3300.

(B) For the purpose of paragraph (c)(1)(i) of this section, the following provisions also apply:

(*1*) *Route of administration.* NMP shall be administered by inhalation.

(*2*) [Reserved]

(ii) *Reporting requirements.* (A) Oncogenicity testing shall be completed and a final report submitted to EPA within 53 months of the date specified in paragraph (e)(1) of this section.

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

(2) *Mutagenic effects—gene mutations*—(i) *Required testing.* (A) A gene mutation test in mammalian cells shall be conducted with NMP in accordance with § 798.5300 of this chapter.

(B)(*1*) A sex-linked recessive lethal test in *Drosophila melanogaster* shall be conducted with NMP in accordance with § 798.5275 of this chapter except for the provisions in paragraphs (d)(5)(ii) and (d)(5)(iii) of § 798.5275, unless the result of the mammalian cells in culture gene mutation test conducted pursuant to paragraph (c)(2)(i)(A) of this section is negative.

(*2*) For the purpose of paragraph (c)(2)(i)(B)(*1*) of this section, the following provisions also apply:

(*i*) *Dose level and duration of exposure.* For the initial assessment of mutagenicity, it is sufficient to test a single dose of the test substance for screening purposes. This dose should be the maximum tolerated dose, or that which produces some indication of toxicity, or shall be the highest dose attainable. At least three dose levels shall be tested. Exposure shall be for one 24-hour time period.

(*ii*) *Route of administration.* Animals shall be exposed to NMP by inhalation.

(C)(*1*) A mouse visible specific locus (MVSL) or mouse biochemical specific locus (MBSL) test shall be conducted with NMP in accordance with § 798.5200 or § 798.5195, except for the provisions in paragraphs (d)(5)(ii) and (d)(5)(iii) of § 798.5200 for the MVSL and of § 798.5195 for the MBSL if the result of the sex-linked recessive lethal test conducted pursuant to paragraph (c)(2)(i)(B) of this section is positive and if, after a public program review, EPA issues a Federal Register notice or sends a certified letter to the test sponsor specifying that the testing shall be initiated.

(*2*) For the purpose of paragraph (c)(2)(i)(C)(*1*) of this section, the following provisions also apply:

(*i*) *Dose levels and duration of exposure.* A minimum of two dose levels shall be tested. Exposure shall be for 6 hours per day. Duration of exposure shall be dependent upon accumulated total dose desired for each group.

(*ii*) *Route of administration.* Animals shall be exposed to NMP by inhalation.

(ii) *Reporting requirements.* (A) The gene mutation tests shall be completed and final reports submitted to EPA as follows:

(*1*) The gene mutation test in mammalian cells is due within 10 months of the effective date of the final rule.

(*2*) The sex-linked recessive lethal test in *Drosophila melanogaster*, if required, is due within 22 months of the effective date of the final rule.

(*3*) The MVSL test or MBSL test, if required, is due within 51 months of the date of EPA's notification of the test sponsor by certified letter or Federal Register notice under paragraph (c)(2)(i)(C) of this section that testing shall be initiated.

(B) Progress reports shall be submitted to EPA for the gene mutation test in mammalian cells at 6-month intervals beginning 6 months after the effective date of the final rule until the final report is submitted to EPA.

(C) Progress reports shall be submitted to EPA for the sex-linked recessive lethal test, if required, at 6-month intervals beginning 6 months after the final report is submitted to EPA for the gene mutation test in mammalian cells until the final report for the sex-linked recessive lethal test is submitted.

(D) Progress reports shall be submitted to EPA for the MVSL test or MBSL test, if required, at 6-month intervals beginning 6 months after the date of EPA's notification of the test sponsor that testing shall be initiated, until the final report is submitted.

(3) *Mutagenic effects—chromosomal aberrations*— (i) *Required testing.* (A) An in vitro cytogenetics test shall be conducted with NMP in accordance with § 798.5375 of this chapter.

(B)(*1*) An in vivo bone marrow cytogenetics test shall be conducted with NMP in accordance with either § 798.5385 (chromosomal analysis) or § 798.5395 (micronucleus assay) of this chapter except for the provisions in paragraphs (d)(5)(ii), (d)(5)(iii), and (d)(5)(iv) of § § 798.5385 and 798.5395 unless the in vitro test conducted pursuant to paragraph (c)(3)(i)(A) of this section is negative.

(*2*) For the purpose of paragraph (c)(3)(i)(B)(*1*) of this section, the following provisions also apply:

(*i*) *Dose levels.* At least three dose levels shall be tested. The highest dose tested shall be the maximum tolerated dose or that dose producing some signs of cytotoxicity (e.g., partial inhibition of mitosis or a change in the ratio of polychromatic to normochromatic erythrocytes) or shall be the highest dose attainable.

(*ii*) *Route of administration.* Animals shall be administered NMP by intraperitoneal injection.

(*iii*) *Treatment schedule.* The test substance shall be administered once only.

(C)(*1*) A dominant lethal test shall be conducted with NMP in accordance with § 798.5450 of this chapter except for the provisions in paragraphs (d)(5)(ii) and (d)(5)(iii) of § 798.5450, unless either the chromosomal analysis or micronucleus test conducted pursuant to paragraph (c)(3)(i)(B) of this section is negative.

(*2*) For the purpose of paragraph (c)(3)(i)(C)(*1*) of this section, the following provisions also apply:

(*i*) *Dose level and duration of exposure.* The duration of exposure shall be for 6 hours per day for 5 consecutive days. Three dose levels shall be used. The highest dose shall produce signs of toxicity (e.g., slightly reduced fertility) or shall be the highest dose attainable.

(*ii*) *Route of administration.* Animals shall be exposed to NMP by inhalation.

(D)(*1*) A heritable translocation test shall be conducted with NMP in accordance with § 798.5460 of this chapter except for the provisions in

paragraphs (d)(5)(ii) and (d)(5)(iii) of § 798.5460, if the result of the dominant lethal test conducted pursuant to paragraph (c)(3)(i)(C) of this section is positive and if, after a public program review, EPA issues a **Federal Register** notice or sends a certified letter to the test sponsor specifying that the testing shall be initiated.

(*2*) For the purpose of paragraph (c)(3)(i)(D) of this action, the following provision also applies:

(*i*) *Dose level and duration of exposure.* The duration of exposure shall be for 6 hours per day for 5 consecutive days. At least two dose levels shall be tested. The highest dose shall result in toxic effects (which shall not produce an incidence of fatalities which would prevent a meaningful evaluation), or shall be the highest dose attainable.

(*ii*) *Route of administration.* Animals shall be exposed to NMP by inhalation.

(ii) *Reporting requirements.* (A) The chromosomal aberration tests shall be completed and the final reports submitted to EPA as follows:

(*1*) The in vitro cytogenetics test is due within 10 months of the effective date of the final rule.

(*2*) The in vivo cytogenetics test, if required, is due within 24 months of the effective date of the final rule.

(*3*) The dominant lethal test, if required, is due within 36 months of the effective date of the final rule.

(*4*) The heritable translocation test, if required, is due within 25 months of the date of EPA's notification of the test sponsor by certified letter or **Federal Register** notice under paragraph (c)(3)(i)(D) that testing shall be initiated.

(B) Progress reports shall be submitted to EPA for the in vitro cytogenetics test at 6-month intervals beginning 6 months after the date specified in paragraph (e)(1) of this section until the final report is submitted.

(C) Progress reports shall be submitted to EPA for the in vivo cytogenetics test, if required, at 6-month intervals beginning 6 months after the date the final report is submitted for the in vitro cytogenetics test until the in vivo cytogenetics final report is submitted.

(D) Progress reports shall be submitted to EPA for the dominant lethal test, if required, at 6-month intervals beginning 6 months after the date the final report is submitted for the in vitro cytogenetics test if the result of the in vitro cytogenetics test is positive, or at 6- month intervals beginning 6 months after the date the final report is submitted for the in vivo cytogenetics test if the result of the in vivo cytogenetics test is positive, until the dominant lethal final report is submitted.

(E) Progress reports shall be submitted to EPA for the heritable translocation test, if required, at 6-month intervals beginning 6 months after the date of EPA's notification of the test sponsor that testing shall be initiated, until the final report is submitted.

(*4*) *Developmental toxicity*—(i) *Required testing.* (A) Oral developmental toxicity testing shall be conducted in accordance with § 798.4900 of this chapter except for the provisions in paragraphs (a), (e)(1)(i), (e)(2), (f)(1), and (f)(3) of § 798.4900.

(B) For the purpose of paragraph (c)(4)(i)(A) of this section, the following provisions also apply:

(*1*) *Purpose.* In the assessment and evaluation of the toxic characteristics of a chemical, determination of the potential developmental toxicity is important. The developmental toxicity study is designed to provide information on the potential hazard to the unborn which may arise from exposure of the mother during pregnancy, and to determine the concentration of the test substance in the maternal, placental, and fetal tissues.

(*2*) *Animal selection.* Developmental toxicity testing shall be conducted in a mammalian species other than the rat. Placental transfer, however, shall be conducted in the rat, mouse, hamster, or rabbit. Commonly used laboratory strains shall be employed. The strain shall not have low fecundity and shall preferably be characterized for its sensitivity to developmental toxins.

(*3*) *Additional test groups*—(*i*) *Placental transfer.* To determine the concentration of test substance in maternal, placental, and fetal tissues, at least three pregnant rats, mice, hamsters, or rabbits shall be added to each dose level. At least two fetuses per litter shall be used to determine the concentration of the test substance in fetal tissue.

(*ii*) *Control group.* A concurrent control group shall be used. This group shall be an untreated or sham treated control group, or, if a vehicle is used in administering the test substance, a vehicle control group. Except for treatment with the test substance, animals in the control group(s) shall be handled in an identical manner to test group animals.

(*4*) *Treatment of results.* Data shall be summarized in tabular form, showing for each test group: the number of animals at the start of the test, the number of pregnant animals, the number and percentages of live fetuses, the number of fetuses with any soft tissue or skeletal abnormalities, and the amount of test substance found in the maternal, placental, and fetal tissues.

(*5*) *Test report.* In addition to the reporting requirements as specified under part 792, subpart J, of this chapter, the following specific information shall be reported:

(*i*) Toxic response data by concentration.

(*ii*) Species and strain.

(*iii*) Date of death during the study or whether animals survived to termination.

(*iv*) Date of onset and duration of each abnormal sign and its subsequent course.

(*v*) Food, body weight, and uterine weight data.

(*vi*) Pregnancy and litter data.

(*vii*) Fetal data (live/dead, sex, soft tissue and skeletal defects, resorptions).

(*viii*) The amount of test substance found in the maternal, placental, and fetal tissues shall be reported for all animals for all dose levels.

(ii) *Reporting requirements.* (A) Developmental toxicity testing shall be completed and a final report submitted to EPA within 12 months of the effective date of the final rule.

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

(5) *Reproductive toxicity*—(i) *Required testing.* (A) Reproductive toxicity testing shall be conducted in accordance with § 798.4700 of this chapter except for the provision in paragraph (c)(5)(i)(A) and (c)(5)(ii) of § 798.4700.

(B) For the purpose of paragraph (c)(5)(i)(A) of this section, the following provisions also apply:

(*1*) NMP shall be administered orally.

(*2*) [Reserved]

(ii) *Reporting requirements.* (A) Reproductive toxicity testing shall be completed and a final report submitted to EPA within 29 months of the effective date of the final rule.

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

(6) *Neurotoxicity*—(i) *Required testing*— (A) *Functional observational battery.* (*1*) A functional observational battery shall be conducted with NMP in accordance with § 798.6050 of this chapter except for the provisions in paragraphs (d)(4)(ii), (d)(5), and (d)(6) of § 798.6050.

(*2*) For the purpose of paragraph (c)(6)(i)(A) of this section, the following provisions also apply:

(*i*) *Lower doses.* The data from the lower doses shall show either graded

dose-dependent effects or no neurotoxic (behavioral) effects at any dose tested.

(*ii*) *Duration and frequency of exposure.* For the acute testing, animals shall be exposed for 6 hours per day for 1 day. For the subchronic testing, animals shall be exposed for 6 hours per day 5 days per week for a 90-day period.

(*iii*) *Route of exposure.* Animals shall be exposed to NMP by inhalation.

(B) *Motor activity.* (*1*) Motor activity tests shall be conducted with NMP in accordance with § 798.6200 of this chapter except for provisions in paragraphs (d)(4)(ii), (d)(5), and (d)(6) of § 798.6200.

(*2*) For the purpose of paragraph (c)(6)(i)(B) of this section, the following provisions also apply:

(*i*) *Lower doses.* The data from the lower doses shall show either graded dose-dependent effects or no neurotoxic (behavioral) effects at any dose tested.

(*ii*) *Duration and frequency of exposure.* For the acute testing, animals shall be exposed for 6 hours per day for 1 day. For the subchronic testing, animals shall be exposed for 6 hours per day 5 days per week for a 90-day period.

(*iii*) *Route of exposure.* Animals shall be exposed by inhalation.

(C) *Neuropathology.* (*1*) Neuropathology testing shall be conducted with NMP in accordance with § 798.6400 of this chapter except for provisions in paragraphs (d)(4)(ii), (d)(5), (d)(6), and (d)(8)(iv)(C) of § 798.6400.

(*2*) For the purpose of paragraph (c)(6)(i)(C) of this section, the following provisions also apply:

(*i*) *Lower doses.* The data from the lower doses shall show either graded dose-dependent effects or no neurotoxic (behavioral) effects at any dose tested.

(*ii*) *Duration and frequency of exposure.* Animals shall be exposed for 6 hours per day 5 days per week for a 90-day period.

(*iii*) *Route of exposure.* Animals shall be exposed to NMP by inhalation.

(*iv*) *Clearing and embedding.* After dehydration, tissue specimens shall be cleared with xylene and embedded in wax or plastic medium except for the sural nerve which should be embedded in plastic. Multiple tissue specimens (e.g. brain, cord, ganglia) may be embedded together in one single block for sectioning. All tissue blocks shall be labelled to provide unequivocal identification. A method for plastic embedding is described by Spencer et al. in paragraph (d) of this section.

(ii) *Reporting requirements.* (A) The neurotoxicity tests required under paragraph (c)(6) shall be completed and the final results submitted to EPA within 21 months of the effective date of the final rule.

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

(7) *Subchronic inhalation toxicity*—(i) *Required testing.* A subchronic inhalation toxicity test shall be conducted with NMP in accordance with § 798.2450 of this chapter.

(ii) *Reporting requirements.* (A) The subchronic inhalation toxicity test shall be completed and the final report submitted to EPA within 15 months of the effective date of the final rule.

(B) Progress reports shall be submitted to EPA for the subchronic inhalation toxicity test at 6-month intervals beginning 6 months after the effective date of the final rule until the final report is submitted.

(8) *Pharmacokinetics testing*—(i) *Required testing.* Pharmacokinetics testing is required.

(ii) *Test standard.* [Reserved]

(iii) *Reporting requirements.* [Reserved]

(d) *Reference.* For additional background information, the following reference should be consulted.

(1) Spencer, P. S., Bischoff, M. C., and Schaumburg, H. H. "Neuropathological methods for the detection of neurotoxic disease." In: "Experimental and Clinical Neurotoxicology." Spencer, P. S. and Schaumburg, H. H., eds. Baltimore, MD: Williams and Wilkins, pp. 743–757 (1980).

(2) [Reserved]

(e) *Effective dates.* (1) The effective date of the final rule is May 11, 1990.

(2) The guidelines and other test methods cited in this section are referenced here as they exist on the effective date of the final rule.

(Information collection requirements have been approved by the Office of Management and Budget under Control Number 2070-0033)

[FR Doc. 90-7079 Filed 3-27-90; 8:45 am]

BILLING CODE 6560-50-D

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 2 and 80

[GEN Docket No. 90-133; FCC 90-91]

Maritime Radio Service

AGENCY: Federal Communications Commission.

ACTION: Proposed rules.

SUMMARY: As a result of international revisions adopted at the 1987 World Administrative Radio Conference for Mobile Services (1987 Mobile WARC), this Notice of Proposed Rule Making proposes to revise the rules regarding the high frequency (HF) bands that are allocated exclusively to the maritime mobile service. A major task of the 1987 Mobile WARC was to rearrange the channelling of the exclusive maritime mobile HF bands between 4000-27500 kHz (HF bands), which had not been reviewed since 1974, and to incorporate the new bands allocated to the maritime mobile services by the 1979 World Administrative Radio Conference. Internationally, the changes will take effect on July 1, 1991, and will affect every licensed ship and coast station worldwide that operates in the HF bands.

DATES: Comments must be received on or before June 8, 1990, and reply comments on or before July 9, 1990.

ADDRESSES: Federal Communications Commission, 1919 M Street NW., Washington, DC 20554.

FOR FURTHER INFORMATION CONTACT: Kathryn S. Hosford, Special Services Division, Private Radio Bureau, Federal Communications Commission, Washington, DC 20554; or telephone (202) 632-7197.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Notice of Proposed Rule Making, GEN Docket No. 90-133, adopted March 8, 1990, and released March 20, 1990. The complete text of the Notice of Proposed Rule Making is available for inspection and copying during normal business hours in the FCC Dockets Branch (room 230), 1919 M Street NW., Washington, DC. The full text also may be purchased from the Commission's copy contractor: International Transcription Service, 2100 M Street NW., Suite 140, Washington, DC 20037; telephone 202-857-3800.

Summary of Notice of Proposed Rule Making

1. The Notice of Proposed Rule Making (Notice) sets forth the proposed amendments that are necessary to implement the Final Acts of the World Administrative Radio Conference for Mobile Services, 1987, (1987 Mobile WARC) into the Commission's Rules. This is the second in a series of three rule making proceedings implementing the 1987 Mobile WARC into the Commission's Rules.

2. The revisions adopted by the 1987 Mobile WARC expanded the frequency spectrum available for newer forms of maritime mobile systems. The United States supported these changes. Consequently, the Notice proposes an increase in frequencies for digital