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CONSUMER PRODUCT SAFETY COMMISSION

■

BICYCLES, TOYS, AND OTHER CHILDREN'S ARTICLES

**Test Methods For Simulating Use
and Abuse; Proposed Banning
of Certain Articles**

Title 16—Commercial Practices

CHAPTER II—CONSUMER PRODUCT SAFETY COMMISSION

SUBCHAPTER C—FEDERAL HAZARDOUS SUBSTANCES ACT REGULATIONS

PART 1500—HAZARDOUS SUBSTANCES AND ARTICLES, ADMINISTRATION AND ENFORCEMENT REGULATIONS

Test Methods for Simulating Use and Abuse of Toys, Games, and Other Articles Intended for Use by Children

The purpose of this document is to promulgate regulations (16 CFR 1500.50 through 1500.53) establishing test methods to simulate the normal and reasonably foreseeable use, damage, or abuse to which toys, games, and other articles intended for use by children may be subjected. These regulations establish test methods for articles intended for three age groups, specifically, 18 months of age and less, over 18 months but not over 36 months of age, and over 36 months but not over 96 months of age. The tests prescribed for the articles are impact, bite, flexure, torque, tension, and compression tests.

The purpose of each of the tests is set forth below. The impact test for children up to 18 months is intended to simulate a child dropping a toy while standing in a crib or striking a toy on a solid structure. The impact test for children over 18 months and under 96 months is intended to simulate a child knocking a toy from a table to the floor. The flexure test is intended to simulate a child bending a toy back and forth. The bite test is intended to distinguish between brittle and pliable materials which may splinter or shatter when bitten. The torque test is intended to simulate the twisting action a child uses for detaching components. The tension test is intended to simulate the pulling action a child uses for detaching components. The compression test is intended to simulate a child applying a portion of his body weight to a toy such as in leaning or stepping on the toy.

The regulations promulgated below do not in and of themselves ban toys, games, and other articles intended for use by children. Rather, they provide test methods to be used whenever referenced in banning regulations in 16 CFR, Subchapter C. Such banning regulations may define particular mechanical hazards and utilize these use and abuse test methods when appropriate.

BACKGROUND

In the FEDERAL REGISTER of December 8, 1972 (37 FR 26120), the Food and Drug Administration, pursuant to sections 2(f)(1)(D), (q)(1)(A), (s), and 3(e)(1) of the Federal Hazardous Substances Act, proposed test methods for simulating normal use or reasonably foreseeable damage of abuse of toys, games, and other articles intended for use by children (21 CFR 191.20 through 191.23).

Effective May 14, 1973, section 30(a) of the Consumer Product Safety Act (Pub. L. 92-573, 86 Stat. 1231; 15 U.S.C.

2079(a)) transferred functions under the Federal Hazardous Substances Act to the Consumer Product Safety Commission.

Subsequently, on September 27, 1973 (38 FR 270 12), the Consumer Product Safety Commission revised and transferred the regulations under the Federal Hazardous Substances Act (21 CFR Part 191 became 16 CFR Part 1500). Accordingly, the regulations proposed as 21 CFR 191.20 through 191.23 are acted upon below as 16 CFR 1500.50 through 1500.53.

RESPONSE TO PROPOSALS

In response to the proposal of December 8, 1972, approximately 40 comments were received from interested parties, including the Association of General Merchandise Chains (AGMC), Juvenile Products Manufacturers Association (JPMA), National Association of Doll Manufacturers (NADM), Stuffed Toy Manufacturers Association (STMA), Toy Manufacturers of America (TMA), consumers, consumer interest groups, individual manufacturers, local government agencies, and a retailer.

Four of the comments supported the proposal as published. The principal issues raised in the remainder of the comments and the Commission's conclusions thereon are as follows:

1. *General—a. Generic hazards.* Many of the comments suggest that criteria for evaluating and defining generic hazards (such as sharp edges, small parts, etc.) be incorporated into the test procedures prior to their promulgation. The Commission recognizes the need for criteria that would promote a uniform approach to defining generic hazards presented by children's articles. Such criteria are currently under development. Because these test methods provide significant guidance to interested parties in evaluating an article for the presence of a hidden potential hazard, the Commission finds it should not delay their promulgation until definitive hazard criteria have been developed.

b. *Age labeling.* Several comments suggest that the requirements in proposed 21 CFR 191.20(b) be changed to permit age labeling in terms of years instead of months. In the subject regulation (promulgated below as 16 CFR 1500.50(b)), labeling, including age labeling, is a factor to be considered in determining the stringency of test methods in the regulations that will be applied to a particular article; however, there is no requirement for age labeling. Manufacturers may voluntarily label their products in terms of months or years. In the absence of voluntary age labeling, an article will be subject to the most stringent applicable tests.

c. *Age groups.* One comment contends that the age group 36 to 96 months encompasses a span too wide to be effectively covered by a single set of test methods and therefore should be divided into two separate groups spanning 3 to 5 and 5 to 8 years. Stating that children in the latter age group are mature enough not

to abuse certain articles, the commenter suggests that articles intended for use by children in the 5 to 8 years age group be exempt from the impact, bite, and compression tests.

Factors considered in determining the three age groups specified in the proposal and adopted below included types of articles normally used by particular age groups and the types of injuries incurred during use and abuse of such articles. After evaluating these factors, the Commission finds that the proposed age groups and the scope of the testing methods to be applied to articles intended for use by the respective age groups are appropriate.

d. *Unassembled toys.* Two manufacturers and a retailer suggest that unassembled toys be tested only when they are in an assembled state.

General adoption of this suggestion would not offer adequate protection for children. A potential hazard may be presented by a component of an article while the article is in an unassembled state, and the hazard may not be evident or susceptible to exposure once the article is in the assembled state. The suggestion does have merit in cases where an article is reasonably intended to be assembled by an adult prior to being given to a child. In that situation, a child would not ordinarily be exposed to hazards presented only in the preassembly state. The Commission concludes that articles reasonably intended to be assembled by adults and prominently labeled to indicate that assembly by an adult is required should be tested only in the assembled state. In determining whether a toy or other article is reasonably intended to be assembled by an adult prior to use, various objective factors such as marketing practices, the customary patterns of usage of a product by children, and the labeling on the toy and/or its packaging will be considered. The regulation (16 CFR 1500.50(b)(4) below) has been changed accordingly.

A manufacturer comments that toy games for children over 3 years of age are often built to have "fly-apart" pieces and should not be tested in an assembled state.

Since a child will normally come in contact with such toys in both their assembled and unassembled states, provision must be made for simulating use and abuse conditions in both instances. Individual pieces in an assembled state might present a hazard not present in the unassembled state. Adoption of the suggestion would therefore be inconsistent with the purpose of this promulgation. The regulation (16 CFR 1500.50(b)(5) below) has, however, been clarified.

e. *Crib attachments.* Several commenters contend that certain articles intended for infants, such as cribs and crib attachments, are not subject to the same abuse as toys. The association suggests that the test procedures be administered only to toys and that "toy" be defined in the regulations.

The Commission considers it unnecessary in this case to draw a distinction between "toys" and "other articles in-

tended for use by children," since both categories are within the scope of these regulations. However, as previously indicated, these regulations are only applicable when specifically referenced in banning regulations. The fact that crib attachments are normally secured to a fixed structural component does not necessarily reduce their exposure to abuse conditions simulated by the test methods. Further, it should be noted that some crib attachments may be put into cribs without being secured and therefore used and abused by an infant in the same manner as articles not intended for fixed positioning.

1. Preconditioning. TMA and a manufacturer suggest that the lack of a prescribed standardized preconditioning atmosphere will result in a variable that may contribute to inconsistent test results. They also suggest that if an article is intended to be used under other than normal conditions, the article should be subjected to a simulation of those conditions prior to testing.

The Commission finds that adding a provision regarding standardized preconditioning is consistent with the purpose of these regulations. Accordingly, 16 CFR 1500.50(b)(3) below specifies a conditioning period of 4 hours in an environment of $73^{\circ}\pm 3^{\circ}$ F. ($23^{\circ}\pm 2^{\circ}$ C.) at a relative humidity of 20-70 percent. Further, toy testing must commence within five minutes after the toy has been removed from the preconditioned atmosphere. For purposes of enforcement the Commission intends to test toys under the most severe combinations of these temperature and humidity conditions. The suggestion regarding toys used under other than normal conditions does not warrant adding provisions therefor at this time, since the Commission is not aware of problems presented by toys used under other than normal conditions. If hazards are evidenced by a particular children's article for which the testing approach promulgated below is deemed inappropriate, different methods, including standardized conditioning, may be prescribed for such articles in specific banning regulations.

g. Test equipment. Regarding proposed 21 CFR 191.21 (e) (2) (i), 191.22(e) (2) (i), and 191.23(e) (2) (i), a toy manufacturer suggests that the test equipment for the torque test be stipulated as a simple torque wrench because many manufacturers do not have complicated laboratory equipment available for test purposes. In addition, TMA suggest that the least expensive commercially available piece of equipment be specified wherever possible as appropriate test equipment.

The Commission recognizes that varied devices can be employed to effectively perform the same function in the simulation of use and abuse as prescribed. Accordingly, testing apparatus specifications throughout the regulations below have been revised to be performance oriented with limited design requirements.

h. Measurements. Throughout the regulations the English system of measure-

ment is followed by metric approximations. For purposes of compliance with the various test methods in the regulation, the English system shall be used. The metric approximations are included for convenience and information only.

2. Definitions—a. *Tub toy.* Seven toy firms and TMA comment that the proposed definition of "tub toy" (21 CFR 191.20(c)(2)) is too subjective for uniform interpretation.

Reference to "tub toy" has been deleted from the regulations promulgated below because the Commission's experience indicates that the severity of any potential hazard presented by a toy with anticipated use in water does not increase due to that exposure. Accordingly, the reference to "soap solution" has also been deleted.

b. *Mouth toys.* A toy manufacturer suggests that the proposed definition of "mouth toy" (21 CFR 191.20(c)(3)) be changed by adding the word "primarily," making it read "a toy primarily intended to be placed in or in contact with a child's mouth."

The Commission finds that the definition as proposed appropriately reflects the intended scope for the purpose of the regulations. Adding the word "primarily" would not clarify or aid the definition and might imply exclusion of certain articles. Accordingly, the definition (16 CFR 1500.50(c)(2) below) has not been changed.

Two toy firms and TMA request that inflatable toys be exempted from the mouth toy category because the primary play value of an inflatable toy is obtained only when the article is completely inflated. The effect of the exemption would be to exclude certain articles intended only for momentary use in or in contact with a child's mouth.

The Commission finds that since a hazard may be presented during momentary as well as continual use of an article, inflatable toys should not be excluded from the definition of "mouth toy."

c. *Saline solution.* Regarding the proposed definition of "saline solution" (21 CFR 191.20(c)(5)) and the proposed conditioning procedure of soaking mouth toys in saline solution (paragraph (e) (1) (iii) of 21 CFR 191.21, 191.22, and 191.23), TMA and several toy firms suggest that the mineral saline solution be changed to 5 percent to more closely approximate the salt content of saliva.

The intent of the saline solution requirement was to simulate saliva. A saline solution, however, lacks many of the components of saliva. The Commission finds that a true laboratory approximation of saliva would require the preparation of a complex and prohibitively expensive solution. Also, the Commission is unaware of any data indicating that saliva would have a significant effect on mouth toys. Accordingly, the saline solution requirements have been deleted.

3. Impact tests—a. *Crib and playpen attachments.* Regarding the proposed impact test procedure for articles intended for children 18 months of age or less (21 CFR 191.21(b)(3)), three manufacturers suggest that attachments to

cribs and playpens be exempt from the test because such articles usually weigh more than one pound, are attached to a substantial structure, and are therefore not subject to floor impacts.

The purpose of the impact test is not limited to simulating repeated drops of a toy by a child standing in a crib. The test is intended to simulate various conditions of reasonably foreseeable damage or abuse, including an article's being battered by an infant against crib rails and slats, high chair trays, and other proximate structures and articles. Since the fact that crib attachments are usually attached to a structural component does not preclude their exposure to various conditions of abuse, the Commission finds that the suggested exemption should not be granted. Accordingly, the regulation (16 CFR 1500.51(b)(3) below) has not been changed.

b. *Ride-on toys.* TMA and individual toy manufacturers object to having ride-on toys subject to the proposed impact test requirements (21 CFR 191.21(b), 191.22(b), and 191.23(b)) because such toys are too large and heavy to be hand-carried by children.

The Commission finds the suggested exclusion unnecessary since the exemption criteria (discussed in the following paragraph c) of the regulations promulgated below now provide a more reasonable test method for impact for large and heavy ride-on toys.

c. *Exemption criteria.* Regarding the proposed impact tests (21 CFR 191.21(b), 191.22(b), and 191.23(b)), TMA and a number of manufacturers suggest that the exemption criteria (weight) be expanded to include size. They suggest that articles with a base area more than 175 square inches or a volume more than 3 cubic feet be subject to a tipping test instead of an impact test.

The Commission concludes that a tipping test for large and bulky toys is appropriate but that one of the specific measurements offered in the comments should be modified to reflect currently available anthropometric data. These data indicate that an article with a base area of 400 square inches is sufficiently bulky to make its being carried by a child at any significant height unlikely. Such an article would therefore be less subject to destructive impacts as a result of being dropped. Accordingly, a tipping test to simulate impact has been added to the regulations for articles with a base area more than 400 square inches or a volume more than 3 cubic feet (16 CFR 1500.51(b)(4)(iii), 1500.52(b)(4)(iii), 1500.53(b)(4)(iii)). These toys are tested for impact by tipping them over 3 times by pushing the samples slowly past their centers of balance onto an impact medium.

A number of manufacturers contend that the proposed weight criteria for the three impact tests (3, 4, and 10 pounds, respectively) are excessive. Strength data on children obtained from the National Bureau of Standards support the validity of the proposed values which, therefore, have been retained in the regulations below (16 CFR 1500.51(b)(1), 1500.52(b)(1), and 1500.53(b)(1)).

d. *Testing procedure.* Regarding the proposed procedure under the impact test for testing toys intended for use by children over 18 but not over 36 months of age (21 CFR 191.22(b)(3)), a consumer interest group suggests that the severity of the test be increased by changing the number of impacts from 4 to 10. They contend that the manual coordination of children in this age group has not fully developed and that their toys are still subject to a large number of impacts.

The Commission concludes that in the absence of sufficient data to indicate otherwise, the proposed subject impact test (four drops from a height of 3 feet), in conjunction with the other applicable test methods, is an appropriate simulation of the reasonably foreseeable damage or abuse of those articles. Accordingly, the regulation (16 CFR 1500.52(b)(3) below) has not been changed.

4. *Bite test—*a. *Scope.* A manufacturer comments that a bite test (proposed 21 CFR 191.23(c)) is inappropriate for articles intended for use by children over 3 years of age since such children are unlikely to bite on toy intentionally.

Applicability of the bite test to articles intended for use by children over 36 but not over 96 months of age is limited to those articles within the definition of "mouth toy." The Commission, on the basis of a study entitled "Manual and Oral Strengths of American White and Negro Children, Ages 3-6 Years," by Dr. Wilton M. Krogman, has determined that children over 3 years of age can subject such articles to inordinate compressive forces with their molar teeth. The motivation to do so may stem from various factors. Accordingly, the regulation (16 CFR 1500.53(c) below) has not been changed. (The study by Dr. Krogman, dated September 1, 1971, was sponsored by the Closure Committee of the Glass Container Manufacturers Institute, Inc., and a copy may be seen in the Office of the Secretary, CPSC, Room 1025, 1750 K Street NW, Washington, D.C.).

b. *Suggested chewing test substitution.* One comment suggests that a chewing test be substituted for the bite test since hazards may be exposed after a toy is subjected to chewing.

The Commission recognizes that a test simulating a child's chewing activity may be necessary in formulating an all-inclusive approach to simulating normal use and reasonably foreseeable damage or abuse. Accordingly, the Commission is considering the development of a test method simulating chewing action. Such a method would supplement the bite test.

c. *Test equipment.* A toy manufacturer points out various design problems with the proposed bite test apparatus (21 CFR 191.21(c)(2), 191.22(c)(2), and 191.23(c)(2)). TMA and three toy manufacturers suggest that the radius of the apparatus' contact edges be increased from 0.0156 to 0.031 inch.

Certain revisions with respect to the subject apparatus have been made in

response to the comments and as a result of investigations conducted by the Commission. A diagram of a more workable version of the apparatus appears below as figure 1 in 16 CFR 1500.51 and is intended to serve only as a suggested means of administering the prescribed bite test. The tooth contour or geometry generally ranges, at the contacting surfaces, from a sharp edge at the front to a flat surface at the back, with irregularities existing throughout the range. On the basis of information supplied by the National Bureau of Standards, the proposed contact edge radius of 0.0156 inch is acceptable as an approximation of a child's teeth. The radius, however, has been changed to 0.020 inch to minimize costly machining that could be required to achieve the 0.0156-inch specification. The Commission finds that since the original radius was an approximation, the change from 0.0156 to 0.020 inch does not significantly affect the level of protection. The regulations (16 CFR 1500.51(c)(2), 1500.52(c)(2), and 1500.53(c)(2) below) have been so changed.

d. *Testing procedure.* A comment suggests that the proposed testing procedure for the bite test (21 CFR 191.21(c)(3), 191.22(c)(3), and 191.23(c)(3)) be clarified by changing the instruction that the toy shall be placed in the loading device in any reasonable position "utilizing not more than 180 degrees" to "utilizing less than 180 degrees."

The suggestion is acceptable and the regulations (paragraph (c)(3) of 16 CFR 1500.51, 1500.52, and 1500.53 below) have been so changed.

Five manufacturers suggest that the point-of-force application in the bite tests be specified for the purpose of promoting consistency of test results.

The suggestion is consistent with the purpose of these regulations and, accordingly, the bite tests (paragraph (c)(3) of 16 CFR 1500.51, 1500.52, and 1500.53 below) have been changed to specify an insertion depth of 0.25 to 0.5 inch.

e. *Force levels.* Eight toy manufacturers and TMA contend that the force levels prescribed in the bite tests are unnecessarily high and are not indicative of a child's biting capabilities. TMA and the firms suggest alternative levels substantially lower than those in the proposal.

Based on a study entitled "Manual and Oral Strengths of American White and Negro Children, Ages 3-6 Years," by Dr. Wilton M. Krogman (further identified in paragraph 4a above), the Commission finds that children in the three specified age groups are capable of exerting compressive forces with their teeth at the levels designated in the respective bite tests. The performance levels were selected from the Krogman data by using three standard deviations and rounding off to the nearest rational number. This performance level is intended to be indicative of the oldest child in each age group. For example, a three-year old child has an average biting capability of approximately 15 pounds with standard

deviations ranging from about 6 to 16 pounds. Since the data is scattered over a somewhat wide range, the performance requirement of 50 pounds was selected to include the upper percentile children that may be in each age group and to provide a factor of safety in anticipation of reasonably foreseeable abuse or damage.

The performance requirement used for the above age group and the similar requirements used in the two remaining age groupings can be generated by the molar region of the teeth. In using these performance limits in conjunction with a contact radius of 0.020 inch, the Commission is assuming so-called "worst case" conditions for the toys subject to the requirements. This position of assuming "worst case" conditions is intended to consider the high stresses which may be generated in the rear portion of an incomplete or irregularly shaped dental structure.

The proposed force levels then, promulgated below in 16 CFR 1500.51(c)(3), 1500.52(c)(3), and 1500.53(c)(3) are considered to provide an appropriate simulation of reasonably foreseeable damage or abuse due to biting.

5. *Flexure test—*a. *Scope.* Three manufacturers recommend that the proposed flexure tests (21 CFR 191.21(d)(1), 191.22(d)(1), and 191.23(d)(1)) be limited to articles that are intended to be repeatedly bent or formed.

Such a limitation would not properly reflect the intended extent of applicability of the flexure tests. They are intended to simulate use and abuse of any toy or toy component that incorporates metal materials for stiffening or for retention of form and that could be bent or formed. The flexure tests, however, have been changed in 16 CFR 1500.51(d)(1), 1500.52(d)(1), and 1500.53(d)(1) below to clarify their applicability.

b. *Testing procedure.* A manufacturer suggests that the 60-second rest period in the proposed testing procedure for the flexure tests (paragraph (d)(2) of 21 CFR 191.21, 191.22, 191.23) be applied after each group of five cycles rather than 10 cycles because it would be a more appropriate simulation of a child's use.

The intent of the flexure tests is to simulate not only normal use but also reasonably foreseeable damage or abuse. The proposed flexure test procedures are considered to be appropriate simulation of reasonably foreseeable use and abuse conditions. Accordingly, the regulations (paragraph (d)(2) of 16 CFR 1500.51, 1500.52, 1500.53 below) have not been changed as suggested.

TMA and three manufacturers suggest that a specified point-of-force, application be added to the flexure test procedures. This would specify the point at which an article is to be bent.

Such a change is appropriate and the regulations (16 CFR 1500.51(d)(1), 1500.52(d)(1), 1500.53(d)(1)) have been changed accordingly. Maximum flexing forces have also been prescribed as a means of identifying those toys and components that are capable of being bent or formed.

A retailer suggests adding to the flexure tests a method to aid in determining the accessibility of metal components that may break during the 30 cycles of testing.

Although this change appears to be appropriate, the Commission believes such a change may have a substantial impact on the affected industry. Therefore, this suggested change will be proposed as an amendment to these test methods in the near future in order to provide an opportunity for public comment.

6. Torque tests—*a. Scope.* A toy retailer suggests that application of the proposed torque tests (21 CFR 191.21(e), 191.22(e), and 191.23(e)) be limited to those toy components that a child can "firmly grasp and hold" instead of "grasp by at least the thumb and forefinger."

The Commission finds that the suggested change would inappropriately restrict the intended application of the torque tests. To better approximate the manner in which a child could grasp a toy, however, the Commission has changed the regulations (paragraph (e)(1)(i) of 16 CFR 1500.51, 1500.52, and 1500.53 below) to include components that can be grasped with the teeth.

A manufacturer suggests that the torque test provisions be changed so that toys with rotating components would be tested with the rod or shaft clamped with the clamp resisting no more torque than can be exerted by a child of the appropriate age group grasping the shaft with his thumb and forefinger.

The torque tests are not meant to be limited to parts or assemblies that a child can grasp with the thumb and forefinger. Obviously, a child can grasp many toy projections with his whole hand or his teeth. Adoption of the suggestion would therefore be inconsistent with the purposes of the tests.

Another manufacturer suggests that the torque tests be applied only to toys with round or cylindrical projections, parts, or assemblies. This change would make application of the tests too narrow and restrictive for the purposes of the tests.

b. Rotating components. Two manufacturers and TMA suggest changing the torque tests regarding rotating components so that the test load would be applied to the projections, parts, or assemblies attached to the rod or shaft.

In torque testing these components, the Commission is determining the integrity of the attachment method used on the components. Whether the torque is applied to the shaft or to the component itself is immaterial. Accordingly, the suggestion has not been adopted.

c. Torque levels. A manufacturer comments that the proposed torque test force levels, 2, 3, and 4 inch-pounds, are too severe and should be changed to 1, 2, and 3 inch-pounds respectively.

On the basis of child-strength data obtained from the National Bureau of Standards, the Commission finds that the torque test performance levels specified in the proposal are indicative of

the capabilities of children in the respective age groups. Accordingly, the performance levels have not been changed as suggested (16 CFR 1500.51(e)(3), 1500.52(e)(3), and 1500.53(e)(3) below).

7. Tension tests—*a. Scope.* A toy retailer suggests that application of the proposed tension tests (21 CFR 191.21(f), 191.22(f), and 191.23(f)) be limited to those toy components that a child can "firmly grasp and hold" rather than "grasp by at least the thumb and forefinger."

The Commission finds that the suggested change would inappropriately restrict the intended application of the tension tests. To better approximate the manner in which a child could grasp the toy, however, the Commission has changed the regulations (paragraph (f)(1)(i) of 16 CFR 1500.51, 1500.52, 1500.53 below) to include components that can be grasped with the teeth.

A manufacturer suggests that components intended to be removed from children's articles during use be excluded from the tension tests.

The Commission finds that such exclusion would inappropriately restrict the intended application of the tension tests. The fact that some components or attachments of toys are screwed in or placed in the articles does not preclude their exposure to tensile forces during reasonably foreseeable use and abuse. Accordingly, this suggestion has not been adopted.

b. Stuffed toys and beanbags. Five toy manufacturers suggest that the 15-pound tension test force level in proposed 21 CFR 191.22(f)(3) and 191.23(f)(3) be changed to 10 pounds with respect to testing fabric-type articles such as beanbags and plush toys. They contend that fastener and fabric technology are not sufficiently advanced to permit construction that would resist the 15-pound force level.

Testing results indicate to the Commission, however, that a variety of children's articles currently on the market can successfully withstand greater than 15-pound tensile forces applied to fabric seams and objects fastened to fabric and other pliable materials. Accordingly, the regulations (16 CFR 1500.52(f)(1)(ii) and 1500.53(f)(1)(ii) below) have not been changed.

c. Testing procedure. Regarding the proposed tension test procedures (21 CFR 191.21(f)(3), 191.22(f)(3), and 191.23(f)(3)), eight manufacturers and TMA suggest that a point-of-load application be specified for the test which applies a load (force) 90 degrees from the main axis of the test components.

The Commission finds that adopting this suggestion would be inconsistent with the purpose of these regulations since reasonably foreseeable damage or abuse, with respect to tension forces, is not restricted to a particular point of application. Accordingly, the regulations (16 CFR 1500.51(f)(3), 1500.52(f)(3), and 1500.53(f)(3) below) have not been so changed.

8. Compression tests. A toy association recommends that the force level in each

of the proposed compression tests (paragraph (g)(3) of 21 CFR 191.21, 191.22, 191.23) be changed from 20, 25, and 30 pounds to 10, 15, and 20 pounds respectively. The recommendation is not accompanied by any substantiating data or material.

The Commission finds that the force levels as proposed (20, 25, and 30 pounds) are considered appropriate factors for simulating reasonably foreseeable damage or abuse. Accordingly, the recommended change has not been adopted in 16 CFR 1500.51(g)(3), 1500.52(g)(3), and 1500.53(g)(3) below.

9. Effective date. Suggested effective dates for these regulations vary from 3 to 18 months after FEDERAL REGISTER publication. Since the regulations promulgated below do not in and of themselves ban particular toys or classes of toys, the Commission concludes that they should become effective on or before February 6, 1975.

Therefore, having considered the comments and other relevant material, the Commission concludes that the proposed regulations, with changes, should be adopted as set forth below.

Accordingly, pursuant to provisions of the Federal Hazardous Substances Act (secs. 2(f)(1)(D), (q)(1)(A), (s), 3(e)(1), 10(a), 74 Stat. 372, 374, 375, 378, as amended 80 Stat. 1304, 83 Stat. 187-89; 15 U.S.C. 1261, 1262, 1269) in accordance with the provisions of 5 U.S.C. 553, and under authority vested in the Commission by the Consumer Product Safety Act (sec. 30(a), 86 Stat. 1231; 15 U.S.C. 2079(a)), 16 CFR Part 1500 is amended by adding four new sections as follows:

§ 1500.50 Test methods for simulating use and abuse of toys and other articles intended for use by children.

(a) Objective. The objective of §§ 1500.51, 1500.52, and 1500.53 is to describe specific test methods for simulating normal use of toys and other articles intended for use by children as well as the reasonably foreseeable damage or abuse to which the articles may be subjected. The test methods are for use in exposing potential hazards that would result from the normal use or the reasonably foreseeable damage or abuse of such articles intended for children.

(b)(1) Application—general. (i) The test methods described in §§ 1500.51, 1500.52 and 1500.53 are to be used in determining what is normal use and reasonably foreseeable damage or abuse when specifically referenced under § 1500.18. Other banning regulations may also reference these use and abuse toy test procedures.

(ii) The test methods described in §§ 1500.51, 1500.52, and 1500.53 have been established for articles intended for the specified age groups of children: 18 months of age or less, over 18 months but not over 36 months of age, and over 36 months but not over 96 months of age. If an article is marked, labeled, advertised, or otherwise intended for children of ages spanning more than one of these age groups, the article will be sub-

jected to the tests providing the most stringent requirements. If an article is not age-labeled in a clear and conspicuous manner or, based on such factors as marketing practices and the customary patterns of usage of a product by children, is inappropriately age-labeled, and is intended or appropriate for children 96 months of age or less, it will also be subjected to the most stringent test requirements.

(2) For purposes of compliance with the test methods prescribed in §§ 1500.51, 1500.52, and 1500.53, the English system shall be used. The metric approximations are provided in parentheses for convenience and information only.

(3) Each of the test methods described in §§ 1500.51, 1500.52, and 1500.53 shall be applied to a previously untested sample except the tension test which shall be conducted with the test sample used in the torque test.

(4) Prior to testing, each sample shall be subjected to a temperature of $73 \pm 3^\circ \text{F}$ ($23 \pm 2^\circ \text{C}$) at a relative humidity of 20-70 percent for a period of at least 4 hours. The toy testing shall commence within five minutes after the toy has been removed from the preconditioning atmosphere.

(5) Toys reasonably intended to be assembled by an adult and not intended to be taken apart by a child shall be tested only in the assembled state if the shelf package and the assembly instructions prominently indicate that the article is to be assembled only by an adult.

(6) Toys intended to be repeatedly assembled and taken apart shall have the individual pieces as well as the completed article subjected to these test procedures.

(7) In situations where a test procedure may be applied in more than one way to a toy test component, the point (or direction) of force (or torque) application which results in the most severe conditions shall be used.

(c) *Definitions.* As used in this section and in §§ 1500.51, 1500.52, and 1500.53:

(1) "Toy" means any toy, game, or other article designed, labeled, advertised, or otherwise intended for use by children.

(2) "Mouth toy" means any toy reasonably intended to be placed into or in contact with a child's mouth.

§ 1500.51 Test methods for simulating use and abuse of toys and other articles intended for use by children 18 months of age or less.

(a) *Application.* The test methods described in this section shall be used to simulate the normal and reasonably foreseeable use, damage, or abuse of toys and other articles intended for use by children 18 months of age or less in conjunction with section 1500.18.

(b) *Impact test*—(1) *Application.* Except as provided in paragraph (b) (4) of this section, toys having a weight of less than 3.0 pounds ± 0.01 pound (1.4 kilograms) shall be subject to this test.

(2) *Impact medium.* The impact medium shall consist of a $\frac{1}{8}$ inch (0.3-centimeter) nominal thickness of type IV

vinyl-asbestos tile, as specified in Federal specification SS-T-312A,¹ over at least a 2.5 inch (6.4-centimeter) thickness of concrete. The impact area shall be at least 3 square feet (0.3 square meter).

(3) *Testing procedure.* Except as provided in paragraph (b) (4) (i) and (ii) of this section, the toy shall be dropped 10 times from a height of 4.5 feet ± 0.5 inch, (1.37 meters) onto the impact medium described in paragraph (b) (2) of this section. The toy shall be dropped in random orientation. After each drop, the test sample shall be allowed to come to rest and shall be examined and evaluated before continuing.

(4) *Large and bulky toys.* (i) A toy that has a projected base area of 2,560 or more square centimeters (400 or more square inches), shall be tested for impact in accordance with paragraph (b) (4) (iii) of this section. The base area for toys with permanently attached legs shall be measured by calculating the area enclosed by straight lines connecting the outermost edge of each leg of the perimeter.

(ii) A toy that has a volume of more than 3 cubic feet (0.085 cubic meter) calculated by the major dimensions without regard to minor appendages, shall be tested for impact in accordance with paragraph (b) (4) (iii) of this section.

(iii) The toys described in paragraph (b) (4) (i) and (ii) of this section shall be tested for impact by tipping them over three times by pushing the samples slowly past their centers of balance onto the impact medium described in paragraph (b) (2) of this section.

(c) *Bite test*—(1) *Application.* A toy (or component or any accessible portion thereof) that has an external dimension of 1.25 inches ± 0.05 inch (3.18 centimeters) or less and a design configuration that would permit a child to insert a portion into the mouth in any orientation up to a biting thickness of 1.25 inches ± 0.05 inch (3.18 centimeters), for a penetration of at least 0.25 inch (0.635 centimeter), shall be subject to this test.

(2) *Test equipment*—(1) *Contact mechanism.* The contact mechanism shall be two metal strips or plates each measuring 0.25 inch ± 0.002 inch (0.635 centimeter), high and each having a contact edge radius of 0.020 inch ± 0.002 inch (0.05 centimeter), for at least a 150-degree cross-sectional arc. A suggested contact mechanism appears in figure 1 of this section.

(ii) *Loading device.* The loading device shall be a scale or force gauge having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure.* The test article shall be placed in the contact mechanism in any reasonable position for a penetration of 0.25 to 0.5 inch (0.64 to 1.27 centimeters), which position utilizes less than 180 degrees of the arc of the contact mechanism, and a test load in-

creasing to 25 pounds ± 0.5 pound (11.35 kilograms), shall be evenly applied within 5 seconds. This load shall be maintained for an additional 10 seconds.

(d) *Flexure test*—(1) *Application.* This test shall be applied to each component of a toy containing metal wire(s), or other metal material(s), for stiffening or for retention of form if the component can be bent through a 60-degree arc by a maximum force of 10 pounds ± 0.5 pound (4.55 kilograms), applied perpendicularly to the major axis of the component at a point 2 inches (5 centimeters) from the intersection of the component with the main body of the toy or at the end of the component if the component is less than 2 inches ± 0.05 inch (5 centimeters) long.

(2) *Testing procedure.* The toy shall be secured in a vise equipped with vise shields that are fabricated from 13-gauge cold-rolled steel or other similar material and that have a 0.375-inch (0.95-centimeter) inside radius. The component shall then be bent through a 60-degree arc by a force applied at a point on the component 2 inches ± 0.05 inch (5 centimeters), from the intersection of the component with the main body of the toy or applied at the end of the component if the component is less than 2 inches (5 centimeters), long. The component shall then be bent in the reverse direction through a 120-degree arc. This process shall be repeated for 30 cycles at a rate of one cycle per two seconds with a 60-second rest period occurring after each 10 cycles. Two 120-degree arc bends shall constitute one cycle.

(e) *Torque test*—(1) *Application*—(i) *General.* A toy with a projection, part, or assembly that a child can grasp with at least the thumb and forefinger or the teeth shall be subject to this test.

(ii) *Toys with rotating components.* Projections, parts, or assemblies that are rigidly mounted on an accessible rod or shaft designed to rotate along with the projections, parts, or assemblies shall be tested with the rod or shaft clamped to prevent rotation.

(2) *Test equipment*—(1) *Loading device.* The loading device shall be a torque gauge, torque wrench, or other appropriate device having an accuracy of ± 2 inch pound (± 0.23 kilogram-centimeter).

(ii) *Clamp.* The clamp shall be capable of holding the test component firmly and transmitting a torsional force.

(3) *Testing procedure.* With the toy rigidly fastened in any reasonable test position, the clamp is fastened to the test object or component. A torque of 2 inch pounds ± 0.2 pound (2.30 kilogram-centimeters) shall be applied evenly within a period of 5 seconds in a clockwise direction until a rotation of 180 degrees from the original position has been attained or 2.30 kilogram-centimeters (2 inch-pounds) exceeded. The torque or maximum rotation shall be maintained for an additional 10 seconds. The torque shall then be removed and the test component permitted to return to a relaxed condition. This procedure shall then be repeated in a counterclockwise direction.

(f) *Tension test*—(1) *Application*—(i) *General.* Any projection of a toy that the

¹ Copies may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Incorporation by reference approved by the Director of the Federal Register on October 5, 1972.

child can grasp with at least the thumb and forefinger or the teeth shall be subject to this test. This test is to be conducted on the same toy that has been subjected to the torque test described in paragraph (e) of this section.

(i) *Stuffed toys and beanbags.* A stuffed toy or beanbag constructed of pliable materials having seams (such as fabrics) shall have the seams subjected to 10 pounds ± 0.5 pound (4.55 kilograms) of force applied in any direction.

(2) *Test equipment—(i) Clamps.* One clamp capable of applying a tension load to the test component is required. A second clamp suitable for applying a tension load perpendicularly to the major axis of the test component is also required.

(ii) *Loading device.* The loading device is to be a self-indicating gauge or other appropriate means having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure.* With the test sample fastened in a convenient position, an appropriate clamp shall be attached to the test object or component. A 10-pound ± 0.5 pound (4.55 kilogram) direct force shall be evenly applied, within a period of 5 seconds, parallel to the major axis of the test component and maintained for an additional 10 seconds. The tension clamp shall then be removed and a second clamp appropriate for pulling at 90 degrees shall be attached to the test object or component. A 10-pound ± 0.5 pound (4.55 kilogram) tensile force shall be evenly applied, within a period of 5 seconds, perpendicularly to the major axis of the test component and maintained for an additional 10 seconds.

(g) *Compression test—(1) Application.* Any area on the surface of a toy that is accessible to a child and inaccessible to flat-surface contact during the impact test shall be subject to this test.

(2) *Test apparatus.* The loading device shall be a rigid metal disc 1.125 inches ± 0.015 inch (2.86 centimeters) in diameter and (0.375 inch) (0.95 centimeter) in thickness. The perimeter of the disc shall be rounded to a radius of $\frac{1}{32}$ inch (0.08 centimeter) to eliminate irregular edges. The disc shall be attached to an appropriate compression scale having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure.* The disc shall be positioned so that the contact surface is parallel to the surface under test. A direct force of 20 pounds ± 0.5 pound (9.1 kilograms) shall be evenly applied within 5 seconds through the disc. This load shall be maintained for an additional 10 seconds. During the test the toy is to rest on a flat, hard surface in any convenient position.

§ 1500.52 Test methods for simulating use and abuse of toys and other articles intended for use by children over 18 but not over 36 months of age.

(a) *Application.* The test methods described in this section shall be used to simulate the normal and reasonably foreseeable use, damage, or abuse of toys and other articles intended for use by chil-

centimeters) shall be applied evenly over 18 but not over 36 months of age in conjunction with section 1500.18.

(b) *Impact test—(1) Application.* Except as provided in paragraph (b) (4) of this section, toys having a weight of less than 4.0 pounds ± 0.01 pound (1.8 kilograms), shall be subject to this test.

(2) *Impact medium.* The impact medium shall consist of a $\frac{1}{8}$ inch (0.3 centimeter) nominal thickness of type IV vinyl-asbestos tile, as specified in Federal specification SS-T-312A (see section 1500.51(b) (2) regarding availability), over at least a 2.5 inch (6.4 centimeter) thickness of concrete. The impact area shall be at least 3 square feet (0.3 square meter).

(3) *Testing procedure.* Except as provided in paragraph (b) (4) (i) and (ii) of this section, the toy shall be dropped four times from a height of 3 feet ± 0.5 inch (0.92 meter), onto the impact medium described in paragraph (b) (2) of this section. The toy shall be dropped in random orientation. After each drop, the test sample shall be allowed to come to rest and shall be examined and evaluated before continuing.

(4) *Large and bulky toys.* (i) A toy that has a projected base area of 2,560 or more square centimeters (400 or more square inches) shall be tested for impact in accordance with paragraph (b) (4) (iii) of this section. The base area for toys with permanently attached legs shall be measured by calculating the area enclosed by straight lines connecting the outermost edge of each leg of the perimeter.

(ii) A toy that has a volume of more than 3 cubic feet (0.085 cubic meter) calculated by the major dimensions without regard to minor appendages, shall be tested for impact in accordance with paragraph (b) (4) (iii) of this section.

(iii) The toys described in paragraph (b) (4) (i) and (ii) of this section shall be tested for impact by tipping them over three times by pushing the samples slowly past their centers of balance onto the impact medium described in paragraph (b) (2) of this section.

(c) *Bite test—(1) Application.* A toy (or component or any accessible portion thereof) that has an external dimension of 1.25 inches ± 0.05 inch (3.18 centimeters) or less and a design configuration that would permit a child to insert a portion into the mouth in any orientation up to a biting thickness of 1.25 inches ± 0.05 inch (3.18 centimeters), for a penetration of at least 0.25 inch (0.635 centimeter), shall be subject to this test.

(2) *Test equipment—(i) Contact mechanism.* The contact mechanism shall be two metal strips or plates each measuring 0.25 inch ± 0.002 inch (0.635 centimeter) high and each having a contact edge radius of 0.020 inch ± 0.002 inch (0.05 centimeter) for at least a 150-degree cross-sectional arc. A suggested contact mechanism appears in figure 1 of section 1500.51.

(ii) *Loading device.* The loading device shall be a scale or force gauge having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure.* The test article shall be placed in the contact mechanism in any reasonable position for a penetration of 0.25 to 0.5 inch (0.64 to 1.27 centimeters), which position utilizes less than 180 degrees of the arc of the contact mechanism, and a test load increasing to 50 pounds ± 0.5 pound (22.74 kilograms) shall be evenly applied within 5 seconds. This load shall be maintained for an additional 10 seconds.

(d) *Flexure test—(1) Application.* This test shall be applied to each component of a toy containing metal wire(s), or other metal material(s), for stiffening or for retention of form if the component can be bent through a 60-degree arc by a maximum force of 15 pounds ± 0.5 pound (6.80 kilograms) applied perpendicularly to the major axis of the component at a point 2 inches ± 0.05 inch (5 centimeters), from the intersection of the component with the main body of the toy or at the end of the component if the component is less than 2 inches ± 0.05 inch (5 centimeters) long.

(2) *Testing procedure.* The toy shall be secured in a vise equipped with vise shields that are fabricated from 13-gauge cold-rolled steel or other similar material and that have a 0.375-inch (0.95 centimeter) inside radius. The component shall then be bent through a 60-degree arc by a force applied at a point on the component 2 inches ± 0.05 inch (5 centimeters) from the intersection of the component with the main body of the toy or applied at the end of the component if the component is less than 2 inches (5 centimeters) long. The component shall then be bent in the reverse direction through a 120-degree arc. This process shall be repeated for 30 cycles at a rate of one cycle per two seconds with a 60-second rest period occurring after each 10 cycles. Two 120-degree arc bends shall constitute one cycle.

(e) *Torque test—(1) Application—(i) General.* A toy with a projection, part, or assembly that a child can grasp with at least the thumb and forefinger or the teeth shall be subject to this test.

(ii) *Toys with rotating components.* Projections, parts, or assemblies that are rigidly mounted on an accessible rod or shaft designed to rotate along with the projections, parts, or assemblies shall be tested with the rod or shaft clamped to prevent rotation.

(2) *Test equipment—(i) Loading device.* The loading device shall be a torque gauge, torque wrench, or other appropriate device having an accuracy of ± 0.2 inch-pound (± 0.23 kilogram-centimeter).

(ii) *Clamp.* The clamp shall be capable of holding the test component firmly and transmitting a torsional force.

(3) *Testing procedure.* With the toy rigidly fastened in any reasonable test position, the clamp is fastened to the test object or component. A torque of 3 inch-pounds ± 0.2 inch-pounds (3.46 kilogram-within a period of 5 seconds in a clockwise direction until a rotation of 180 degrees from the original position has been attained or 3 inch-pounds ± 0.2

inch-pounds (3.46 kilogram-centimeters) exceeded. The torque or maximum rotation shall be maintained for an additional 10 seconds. The torque shall then be removed and the test component permitted to return to a relaxed condition. This procedure shall then be repeated in a counterclockwise direction.

(f) *Tension test*—(1) *Application*—(i) *General*. Any projection of a toy that the child can grasp with at least the thumb and forefinger or the teeth shall be subject to this test. This test is to be conducted on the same toy that has been subjected to the torque test described in paragraph (e) of this section.

(ii) *Stuffed toys and beanbags*. A stuffed toy or beanbag constructed of pliable materials having seams (such as fabrics) shall have the seams subjected to 15 pounds (± 0.5 pound (6.80 kilograms)) of force applied in any direction.

(2) *Test equipment*—(i) *Clamps*. One clamp capable of applying a tension load to the test component is required. A second clamp suitable for applying a tension load perpendicularly to the major axis of the test component is also required.

(ii) *Loading device*. The loading device is to be a self-indicating gauge or other appropriate means having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure*. With the test sample fastened in a convenient position, an appropriate clamp shall be attached to the test object of component.

A 15-pound ± 0.5 pound (6.80-kilogram) direct force shall be evenly applied, within a period of 5 seconds, parallel to the major axis of the test component and maintained for an additional 10 seconds. The tension clamp shall then be removed and a second clamp appropriate for pulling at 90 degrees shall be attached to the test object of component. A 15-pound ± 0.5 pound (6.80-kilogram) tensile force shall be evenly applied, within a period of 5 seconds, perpendicularly to the major axis of the test component and maintained for an additional 10 seconds.

(g) *Compression test*—(1) *Application*. Any area on the surface of a toy that is accessible to a child and inaccessible to flat-surface contact during the impact test shall be subject to this test.

(2) *Test apparatus*. The loading device shall be a rigid metal disc 1.125 inches ± 0.015 inch (2.86 centimeters) in diameter and 0.375 inch (0.95 centimeter) in thickness. The perimeter of the disc shall be rounded to a radius of $\frac{1}{32}$ inch (0.08 centimeter) to eliminate irregular edges. The disc shall be attached to an appropriate compression scale having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure*. The disc shall be positioned so that the contact surface is parallel to the surface under test. A direct force of 25 pounds ± 0.5 pound (11.4 kilograms) shall be evenly applied within 5 seconds through the disc. This load shall be maintained for an additional 10 seconds. During the test the toy is to rest on a flat, hard surface in any convenient position.

§ 1500.53 **Test methods for simulating use and abuse of toys and other articles intended for use by children over 36 but not over 96 months of age.**

(a) *Application*. The test methods described in this section shall be used to simulate the normal and reasonably foreseeable use, damage, or abuse of toys and other articles intended for use by children over 36 but not over 96 months of age in conjunction with section 1500.18.

(b) *Impact test*—(1) *Application*. Except as provided in paragraph (b) (4) of this section, toys having a weight of less than 10.0 pounds ± 0.01 pound (4.6 kilograms) shall be subject to this test.

(2) *Impact medium*. The impact medium shall consist of a 0.125-inch (0.3-centimeter), thickness of type IV vinyl-asbestos tile, as specified in Federal specification SS-T-312A (see section 1500.51 (b) (2) regarding availability), over at least a 2.5-inch (6.35-centimeter) thickness of concrete. The impact area shall be at least 3 square feet (0.29 square meter).

(3) *Testing procedure*. Except as provided in paragraph (b) (4) (i) and (ii) of this section the toy shall be dropped four times from a height of 3 feet ± 0.5 inch (0.92 meter) onto the impact medium described in paragraph (b) (2) of this section. The toy shall be dropped in random orientation. After each drop, the test sample shall be allowed to come to rest and shall be examined and evaluated before continuing.

(4) *Large and bulky toys*. (i) A toy that has a projected base area of 2,560 or more square centimeters (400 or more square inches) shall be tested for impact in accordance with paragraph (b) (4) (iii) of this subsection. The base area for toys having permanently attached legs shall be measured by calculating the area enclosed by straight lines connecting the outermost edge of each leg of the perimeter.

(ii) A toy that has a volume of more than 3 cubic feet (0.085 cubic meter), calculated by the major dimensions without regard to minor appendages, shall be tested for impact in accordance with paragraph (b) (4) (iii) of this section.

(iii) The toys described in paragraph (b) (4) (i) and (ii) of this section shall be tested for impact by tipping them over three times by pushing the samples slowly past their centers of balance onto the impact medium described in paragraph (b) (2) of this section.

(c) *Bite test*—(1) *Application*. A toy (or component) that is a mouth toy shall be subject to this test.

(2) *Test equipment*—(i) *Contact mechanism*. The contact mechanism shall be two metal strips or plates each measuring 0.25 inch ± 0.002 inch (0.635 centimeter) high and each having a contact edge radius of 0.020 inch ± 0.002 inch (0.5 centimeter) for at least a 150-degree cross-sectional arc. A suggested contact mechanism appears in figure 1 of section 1500.51.

(ii) *Loading device*. The loading device shall be a scale or force gauge hav-

ing an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure*. The test article shall be placed in the contact mechanism in any reasonable position for a penetration of 0.25 to 0.5 inch (0.64 to 1.27 centimeters) inch), which position utilizes less than 180 degrees of the arc of the contact mechanism, and a test load increasing to 100 pounds ± 0.5 pound (45.50 kilograms) shall be evenly applied within 5 seconds. This load shall be maintained for an additional 10 seconds.

(d) *Flexure test*—(1) *Application*. This test shall be applied to each component of a toy containing metal wire(s), or other metal material(s), for stiffening or for retention of form if the component can be bent through a 60-degree arc by a maximum force of 15 pounds ± 0.5 pound (6.80 kilograms) applied perpendicularly to the major axis of the component at a point 2 inches ± 0.05 inch (5 centimeters) from the intersection of the component with the main body of the toy or at the end of the component if the component is less than 2 inches ± 0.05 inch (5 centimeters) long.

(2) *Testing procedure*. The toy shall be secured in a vise equipped with vise shields that are fabricated from 13-gauge thick cold-rolled steel or other similar material and that have a 0.375-inch (0.95-centimeter) inside radius. The component shall then be bent through a 60-degree arc by a force applied at a point on the component 2 inches (5 centimeters) from the intersection of the component with the main body of the toy or applied at the end of the component if the component is less than 2 inches (5 centimeters) long. The component shall then be bent in the reverse direction through a 120-degree arc. This process shall be repeated for 30 cycles at a rate of one cycle per two seconds with a 60-second rest period occurring after each 10 cycles. Two 120-degree arc bends shall constitute one cycle.

(e) *Torque test*—(1) *Application*—(i) *General*. A toy with a projection, part, or assembly that a child can grasp with at least the thumb and forefinger or the teeth shall be subject to this test.

(ii) *Toys with rotating components*. Projections, parts, or assemblies that are rigidly mounted on an accessible rod or shaft designed to rotate along with the projections, parts, or assemblies shall be tested with the rod or shaft clamped to prevent rotation.

(2) *Testing equipment*—(i) *Loading device*. The loading device shall be a torque gauge, torque wrench, or other appropriate device having an accuracy of ± 0.2 inch-pound (± 0.23 kilogram-centimeter).

(ii) *Clamp*. The clamp shall be capable of holding the test component firmly and transmitting a torsional force.

(3) *Testing procedure*. With the toy rigidly fastened in any reasonable test position, the clamp is fastened to the test object or component. A torque of 4 inch-pounds ± 0.2 inch-pound (4.60 kilogram-centimeters) shall be applied evenly within a period of 5 seconds in a

clockwise direction until a rotation of 180 degrees from the original position has been attained or 4 inch-pounds ± 0.2 inch-pound (4.60 kilogram-centimeters) exceeded. The torque or maximum rotation shall be maintained for an additional 10 seconds. The torque shall then be removed and the test component permitted to return to a relaxed condition. This procedure shall then be repeated in a counterclockwise direction.

(f) *Tension test*—(1) *Application*—(1) *General*. Any projection of a toy that the child can grasp with at least the thumb and forefinger or the teeth shall be subject to this test. This test is to be conducted on the same toy that has been subjected to the torque test described in paragraph (e) of this section.

(1) *Stuffed toys and beanbags*. A stuffed toy or beanbag constructed of pliable materials having seams (such as fabrics) shall have the seams subjected to 15 pound ± 0.5 pound (6.80 kilograms) of force applied in any direction.

(2) *Test equipment*—(1) *Clamps*. One clamp capable of applying a tension load to the test component is required. A second clamp suitable for applying a tension load perpendicularly to the major axis of the test component is also required.

(1) *Loading device*. The loading device is to be a self-indicating gauge or other appropriate means having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure*. With the test sample fastened in a convenient position, an appropriate clamp shall be attached to the test object or component. A 15-pound ± 0.5 pound (6.80-kilogram) direct force shall be evenly applied, within a period of 5 seconds, parallel to the major axis of the test component and maintained for an additional 10 seconds. The tension clamp shall then be removed and a second clamp appropriate for pulling at 90 degrees shall be attached to the test object or component. A 15-pound ± 0.5 pound (6.80-kilogram) tensile force shall be evenly applied, within a period of 5 seconds, perpendicularly to the major axis of the test component and maintained for an additional 10 seconds.

(g) *Compression test*—(1) *Application*. Any area on the surface of a toy that is accessible to a child and inaccessible to flat-surface contact during the impact test shall be subject to this test.

(2) *Test apparatus*. The loading device shall be a rigid metal disc 1.125 inches ± 0.015 inch (2.86 centimeters) in diameter and 0.375 inch (0.95 centimeter) in thickness. The perimeter of the disc shall be rounded to a radius of $\frac{1}{8}$

inch (0.08 centimeter) to eliminate irregular edges. The disc shall be attached to an appropriate compression scale having an accuracy of ± 0.5 pound (± 225 grams).

(3) *Testing procedure*. The disc shall be positioned so that the contact surface is parallel to the surface under test. A direct force of 30 pounds ± 0.5 pound (13.6 kilograms) shall be evenly applied within 5 seconds through the disc. This load shall be maintained for an additional 10 seconds. During the test the

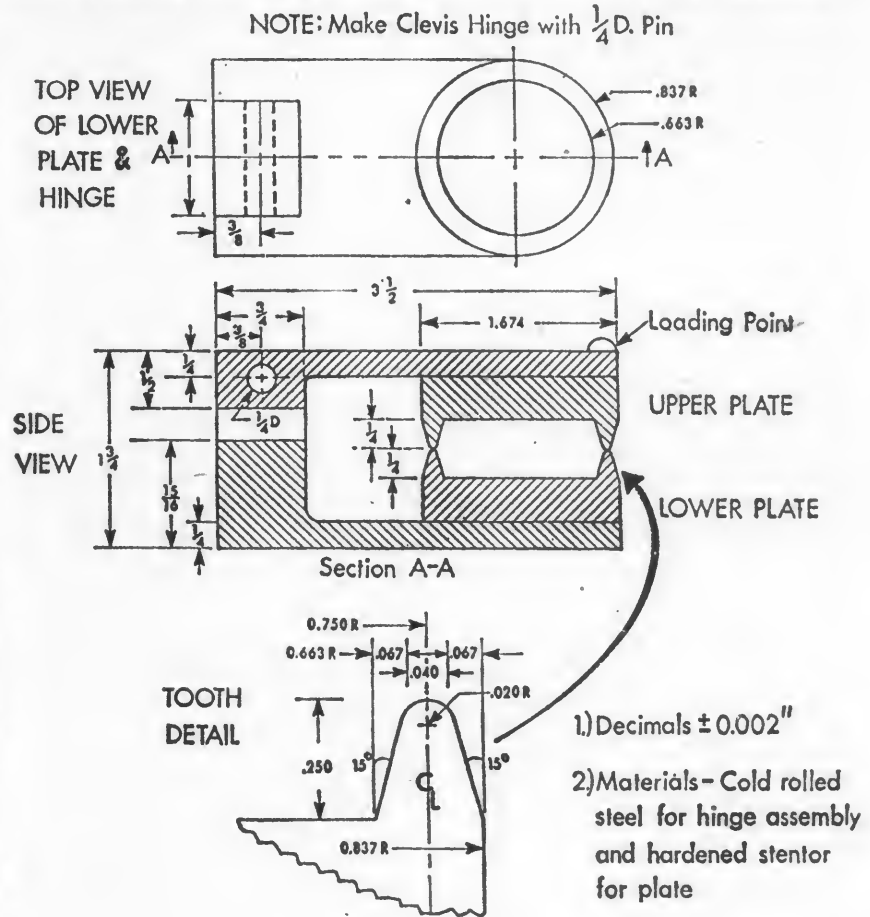
toy is to rest on a flat, hard surface in any convenient position.

Effective date. The regulation promulgated above, 16 CFR 1500.50, 1500.51, 1500.52, and 1500.53, shall become effective February 6, 1975.

(Secs. 2(f) (1) (D), (q) (1) (A), (e), 9(e) (1), 10(a), 74 Stat. 372, 374, 375, 378, as amended 80 Stat. 1304, 83 Stat. 187-89 (15 U.S.C. 1261, 1262, 1269); (5 U.S.C. 553))

Dated: December 30, 1974.

SADYE E. DUNN,
Secretary, Consumer Product
Safety Commission.



BITE TEST CLAMP

FIGURE 1

[FR Doc.75-225 Filed 1-6-75;8:45 am]

CONSUMER PRODUCT SAFETY COMMISSION

[16 CFR Part 1500]

TOYS AND OTHER CHILDREN'S ARTICLES PRESENTING INJURY HAZARDS DUE TO SHARP EDGES

Proposed Banning

The purpose of this document is to propose regulations (16 CFR 1500.18(a) (16) and 1500.47) that will determine whether toys and other articles intended for use by children 8 years of age or less present an unreasonable risk of personal injury due to sharp edges and ban such toys and articles.

Section 2(f)(1)(D) of the Federal Hazardous Substances Act (15 U.S.C. 1261) defines as a hazardous substance any toy or other article which is determined by regulation, in accordance with section 3(e)(1) of the act (15 U.S.C. 1262), to present a mechanical hazard as defined by section (2)(s) of the act. Section 2(q)(1)(A) provides that such a toy or article is a banned hazardous substance.

Existing regulations under 16 CFR 1500.18(a)(1), (2), and (3) ban certain toys that have the potential for causing lacerations, puncture wound injury, aspiration, ingestion or other injury. The Commission will be issuing a series of more specific regulations such as the sharp edge regulation proposed herein and the sharp point regulation proposed elsewhere in this issue (40 FR 1491). It is anticipated that, when finalized, these new regulations will supersede §§ 1500.18 (a)(1), (2), and (3).

INJURY DATA

Injury data from the Commission's National Electronic Injury Surveillance System (NEISS) indicate that a significant number of children have required hospital emergency room treatment for laceration and puncture wounds associated with sharp points and sharp edges presented by toys. NEISS comprises approximately two per cent of the nation's hospital emergency rooms. During 1973, NEISS reported 1,853 lacerations and punctures occurring to children under ten years of age. This figure represents 54 per cent of all NEISS-reported toy injuries to children in this age group. A review of in-depth investigations of a sample of these 1,853 reported injuries discloses the role of sharp points and sharp edges in causing lacerations and punctures. This proposed regulation deals with sharp edges; a companion proposal deals with sharp points.

The injury reports, their sources, and the analysis by the Commission's Bureau of Epidemiology of injuries related to sharp edges on toys may be seen in the Office of the Secretary, CPSC, 10th floor, 1750 K St., NW., Washington, D.C., during working hours Monday through Friday.

SHARP EDGE TEST METHOD

A. General. The purpose of this proposal is to ban toys that cause unreasonable risk of injury due to sharp edges.

A test method is proposed that would identify edges which could cause injury. The test utilizes a synthetic tape wrapped around a metal rod simulating a child's finger. A sharp edge on a toy is pressed against the tape with a force of 3.8 lbs. while the metal rod is rotated through 360°. It is proposed that toys with edges which cut the tape under these conditions will be banned.

Because children do not always use toys as they are intended to be used, all accessible edges must pass the sharp edge test.

B. Force level. A child cannot be expected to have developed proper judgment for the amount of force needed to hold or grasp a toy and therefore could exert a large force on a sharp edge. To limit the effect of the sharpness of edges on toys, a force level must be chosen at which injury can be avoided.

The National Bureau of Standards, in a document entitled "A Study of the Strength Capabilities of Children Ages Two Through Six," NBSIR 73-156 (August 1973), reports that the average maximum gripping force for children 5 years of age is 20 pounds. Older children are stronger and reach larger force levels but have a more accurate sense of judgment and are less likely to indiscriminately grasp an object with maximum force. In view of the injury reports indicating that children under 5 years of age are more likely than older children to suffer laceration injuries from toys, the Commission believes that 20 pounds is a reasonable base to determine the force level for the sharp edge test method.

The sharp edge test procedure is based on the casual handling contact mode and this criterion does not take into account the hazard pattern involving impact. A byproduct of limiting the criterion to casual contact, however, is that the hazard arising from certain slight impact situations will be reduced.

C. Cutting criteria. The Commission sponsored a project at the National Bureau of Standards (NBS) to research human skin cutting. The results are set forth in an NBS report entitled "Some Cutting Experiments on Human Skin and Synthetic Materials," NBSIR 73-262 (October 1973). An objective of this research was to correlate the depth of cut in excised skin samples with combinations of edge configurations and cutting forces. All skin specimens were taken from the abdomen region. The skin samples were wrapped around a semicircular hardwood mandrel that turned a single rotation while the test edge was held stationary and a known force was applied. The edges for these tests were selected for having typical geometries and varied abilities to cut skin. The resultant data were summarized for forces of 1, 2, 4, 8, 12, 16, and 20 pounds and the edges ranked in order of sharpness. The transition from sharp to dull under the 20-pound, no-bleed criterion occurs between two edges; both edges have a 90° included angle and the respective radii are 0.002 and 0.004 inch. The criterion established in the study is used as a basis for the sharp edge test proposed herein.

The sharp edge test method is performance oriented (as opposed to design oriented). The sharpness of an edge cannot be judged by only the included angle and radius. Factors such as the roughness of the surface and burrs or nicks on the edge influence sharpness. Therefore, instead of limiting the requirements to a minimum radius design specification, the sharp edge test method judges sharpness of an edge by its ability to cut through a specified artificial skin at a force of 3.8 lbs. which has been found to simulate the behavior of human skin at a force of 20 lbs.

D. Test device and artificial skin. A prototype test device for sharp edges in toys has been developed for use in the testing procedure. The device is described and illustrated in an NBS report entitled "An Inspection Procedure for Detecting Hazardous Edges," NBSIR 74-428 (April 1974). The operating parameters are based on those used in the human skin cutting tests taking into account the differences between the forces necessary to cut artificial skin as opposed to human skin.

The device is designed to be hand-held, usable in any orientation, and easy to operate. The diameter of the mandrel approximates the size of a child's finger and the mandrel can make a single rotation at a constant speed. The force between the edge and the mandrel is low enough to make the device manageable and inertial loading caused by rotating parts is minimized.

The artificial skin suitable for use with the test device is a tape made from polytetrafluoroethylene (Teflon) and has an adhesive backing to provide for easy mounting on the mandrel. The tape enables the user to discriminate between sharp and dull edges. All test edges categorized into sharp or not by the skin cutting test are correctly classed as sharp or not sharp by use of the polytetrafluoroethylene tape. An edge is judged sharp if it completely cuts through the tape at any location along the center 75 per cent of the line of contact.

To specify the type of tape suitable for the test, performance of the tape against two standard edges must be checked. One edge is in the sharp zone and the other is in the not sharp zone. These standard edges have a 90° included angle and respective radii of 0.002 and 0.010 inch. The range between these edges is wider than the range between edges chosen to represent sharp and not sharp based on the skin cutting test. This will allow several tapes to qualify and will avoid problems of reliance on one specific tape type for the test. Also, tape samples vary in cutability and said edge specifications will make the variances negligible within each roll.

The NBS reports cited above may be seen in the Office of the Secretary, CPSC, 10th floor, 1750 K Street NW., Washington, D.C., during working hours Monday through Friday.

E. Accessibility probe. A sharp edge must be accessible to present a hazard; therefore, only articles that meet defined accessibility criteria are subject to the sharp edge test. These accessibility

criteria may be applied to actual products by use of a finger probe device or by any other means that achieves identical results. The suggested probe is based on a design developed by Underwriters Laboratories, Inc. (shown in figure 1 of proposed 16 CFR 1500.47 below). The dimensions are derived from the maximum penetration depth of fingers and hands into holes and slots up to one inch in diameter or width. The data represents 100 children of ages 1 to 10 years, 100 men, and 100 women.

The accessibility being determined is that of reach or touch as contrasted to accessibility for grasping. Penetration is considerably deeper through slots than holes, and this is reflected by the wedge portion of the otherwise cylindrical shape of the probe.

A justification for the long reach of the probe is that forces on the same level as the criteria could occur in situations where the child has inserted a finger to its maximum reach and jerks the finger out or has the toy pulled or pushed causing contact. The probe has three knuckle joints to allow bending around corners as a finger would, and the tip has an included angle of 60° that allows touching edges on small slots, holes, and tabs. A blunt end design that appears the same as a finger would not be able to touch those edges accessible to the soft end of a finger, such as when pressed against a narrow slot, small hole, or tab. The abrupt changes in the probe's slope reflects averaging the data and the resistance offered to insertion by knuckle joints.

USE AND ABUSE TESTS

Many toys for younger children do not present sharp edges hazards until the toy is broken, dismembered, or disassembled by the child through use or abuse. For this reason, the regulations proposed below require appropriate articles to be subjected to use and abuse test procedures prescribed by 16 CFR 1500.50 through 1500.53 (promulgated elsewhere in this issue of the FEDERAL REGISTER (40 FR 1480)). Those procedures simulate the use and abuse of toys, games, and other articles intended for children in three age groups (18 months or less, over 18 but not over 36 months, and over 36 but not over 96 months).

The regulations proposed below prescribe testing for sharp edges before and after application of the appropriate use and abuse tests.

PROPOSAL

Therefore, on the basis of the above information and data, the Commission proposes to ban by regulation articles intended for use by children not over 96 months of age that have sharp edges and/or contain sharp edges that become accessible in normal use or after reasonably foreseeable damage or abuse because the mechanical hazards associated with the design and manufacture of such articles present an unreasonable risk of personal injury to young children from lacerations and avulsions. Further, the Commission proposes to exempt from such banning toys with sharp edges that

perform an operational function, such as toy scissors, provided that such items are identified as specified in paragraph (a) (16) and other articles with sharp edges that perform an operational function, such as knives. It is contemplated that the effective date will be 180 days after publication of the final regulation in the FEDERAL REGISTER.

Accordingly, pursuant to provisions of the Federal Hazardous Substances Act (secs. 2(f) (1) (D), (q) (1) (A), (s), 3(e) (1), 74 Stat. 372, 374, 375, as amended 80 Stat. 1304-05, 83 Stat. 187-80; 15 U.S.C. 1261, 1262) and under authority vested in the Commission by the Consumer Product Safety Act (Pub. L. 92-573, sec. 30(a), 86 Stat. 1231; 15 U.S.C. 2079(a)), the Commission proposes to amend 16 CFR Part 1500 by adding a new paragraph (a) (16) to § 1500.18 and by adding a new § 1500.47, as follows:

1. Section 1500.18 is amended by adding (a) (16) as follows:

§ 1500.18 Banned toys and other banned articles intended for use by children.

(a) *Toys and other children's articles presenting mechanical hazards.* Under the authority of section 2(f) (1) (D) of the act and pursuant to provisions of section 3(e) of the act, the Commission has determined that the following types of toys or other articles intended for use by children present a mechanical hazard within the meaning of section 2(s) of the act because in normal use, or when subjected to reasonably foreseeable damage or abuse, the design or manufacture presents an unreasonable risk of personal injury or illnesses:

(16) Any toy or other article intended for use by children not over 96 months of age (i) that has a sharp edge as determined pursuant to § 1500.47(d) or (ii) that has an accessible component that has such a sharp edge or (iii) that has such a sharp edge resulting from tests prescribed by §§ 1500.51, 1500.52, or 1500.53. Toys such as toy scissors that (iv) by reason of their functional purpose necessarily present the hazard of sharp edges and (v) do not have any nonfunctional sharp edges are exempt from this paragraph (a) (16) provided that the toy is identified at time of sale as having functional sharp edges. Other articles intended for use by children such as knives that (vi) by reason of their functional purpose necessarily present the hazard of sharp edges and (vii) do not have any nonfunctional sharp edges are exempt from this paragraph (a) (16).

2. Section 1500.47 is added as follows:

§ 1500.47 Test method for determining a sharp edge in toys and other articles intended for use by children not over 96 months of age.

(a) *Objective.* The sharp edge test prescribed by paragraph (d) of this section, or any device utilizing the same reference dimensions and yielding precisely equivalent results, will determine whether or not edges on toys and other

articles intended for use by children not over 96 months of age, and edges exposed in normal use or as a result of reasonably foreseeable damage or abuse of such toys and articles, present an unreasonable risk of injury by laceration and other similar wounds. The test methods specified in §§ 1500.51, 1500.52, and 1500.53 are designed to expose potential hazards that would result from such normal use or reasonably foreseeable damage or abuse.

(b) *Application.* The sharp edge test of paragraph (d) of this section shall be applied to a toy or other article intended for use by children not over 96 months of age if its design or construction could present an unreasonable risk of injury by laceration and other similar wounds. The sharp edge test shall be applied to the sample before and after subjecting the sample to the appropriate tests of §§ 1500.51, 1500.52, and 1500.53.

(c) *Accessibility.* Any edge that can be contacted by a child in normal use or after reasonably foreseeable damage or abuse of the toy shall be subject to the sharp edge test of paragraph (d) of this section. Edges that are accessible through an opening large enough to pass a 1.00-inch (25.4-millimeter) diameter cylinder shall be considered accessible to a child and shall be subjected to the sharp edge test. Edges accessible through an opening having smaller dimensions shall be tested for accessibility by use of the probe shown in figure 1 of this section. The probe shall be used by inserting the tapered end into the opening. The knuckle joints of the probe can be rotated up to 90° from the center line and are designed to simulate knuckle movement. Any edge that can be contacted by the portion of the probe forward of the collar is subject to the sharp edge test.

(d) *Sharp edge test.* (1) Part of the toy may be removed to allow the sharp edge testing device to test an edge that is reached by the probe. Such dismantling of the toy may affect the rigidity of the edge in question. The sharp edge test shall be performed with the edge supported so that its stiffness approximates the edge stiffness in the assembled toy.

(2) The sharp edge test shall be done with a mandrel that is wrapped with one layer of tape, as specified in paragraph (e) (3) and (4) of this section, for a full circumference and a width necessary to give sufficient area for the test. The mandrel shall be so placed that its axis is at 90°±5° to the line of a straight edge, or 90°±5° to a tangent at the test point of a curved edge, and the tape is at the point of contact when the mandrel is rotated.

(3) The edge shall be fixed so that it does not bend or move when the force of the mandrel is applied. To do this, the edge may be supported not closer to the edge than 0.50 inch (12.7 millimeters). No relative motion between the mandrel and the edge shall occur other than the rotation of the mandrel. A force of no greater than 3.8 pounds (16.9 newtons) shall be applied by pressing the mandrel against the edge and the

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mandrel shall be rotated 360° about its axis. If this procedure causes the edge to bend, the maximum force that will not cause the edge to bend shall be used in the test.

(4) The tape shall be removed from the mandrel without enlarging any cut in the tape or causing any score in the tape to become a cut. The edge shall be judged to be sharp if it completely cuts the tape at any location along the center 75 per cent of the line of contact.

(e) *Specifications.* The following specifications shall apply to the sharp edge test of paragraph (d) of this section:

(1) The rotation of the mandrel shall produce a constant tangential velocity of 1.00 ± 0.08 inch per second (25.4 ± 2.0 millimeters per second) during the center 75 per cent of its rotation and shall have a smooth start and stop.

(2) The mandrel shall be made of steel. The test surface of the mandrel shall be free of scratches, nicks, or burrs and shall have a surface roughness no greater than 16 microinches (0.40 micron). The test surface shall have a hardness no less than 40 as measured on the Rockwell "C" scale, as determined pursuant to ASTM E 18-67 entitled "Standard Methods of Test for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials," dated March 6, 1967.¹ The diameter of the mandrel shall be 0.375 ± 0.0005 inch (9.35 ± 0.12 millimeters). The mandrel shall be of suitable length to carry out the test.

(3) The tape shall be adhesive-backed polytetrafluoroethylene. The thickness of the polytetrafluoroethylene shall be between 0.003 inch (0.08 millimeter) and 0.004 inch (0.10 millimeter). The thickness of the adhesive shall be between 0.001 inch (0.03 millimeter) and 0.003 inch (0.08 millimeter).

(4) The tape must be qualified for use by correctly discriminating between two

¹ Copies available from American National Standards Institute, 1430 Broadway, New York, N.Y. 10018 (ANSI Reference No. Z115.6-1967). Filed as part of original document.

standard shaped edges. The qualification procedure in this subparagraph shall be performed on each section of tape no greater than 20 inches (50 centimeters) in length within 4 hours prior to conducting the sharp edge test of paragraph (d) of this section. The tape, when used according to the sharp edge test procedure, shall classify edges I and II (described below) as sharp and not sharp, respectively. Edges I and II shall be made from tool steel and oil hardened to a hardness between 58 and 62 on the Rockwell "C" scale (see paragraph (e) (2) of this section). The two surfaces that intersect to define the edge shall have an included angle of 90° and a surface roughness no greater than 8 microinches (0.20 micron). Edges I and II shall have radii of 0.002 ± 0.0005 inch (0.05 ± 0.012 millimeter) and 0.010 ± 0.0005 inch (0.25 ± 0.012 millimeter), respectively.

(5) The tests prescribed by this section shall be conducted at an ambient temperature between 60° F (15.6° C) and 80° F (26.7° C).

(6) For purposes of compliance with the test method prescribed by this section, the English figures shall be used. The metric approximations are provided in parentheses for convenience and information only.

Interested persons are invited to submit, on or before March 10, 1975, written comments regarding this proposal. Comments and any accompanying data or material should be submitted, preferably in five copies, addressed to the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207. Comments may be accompanied by a memorandum or brief in support thereof. Received comments may be seen in the Office of the Secretary, 10th floor, 1750 K Street NW., Washington, D.C., during working hours Monday through Friday.

Dated: December 30, 1974.

SADYE E. DUNN,
Secretary, Consumer Product
Safety Commission.

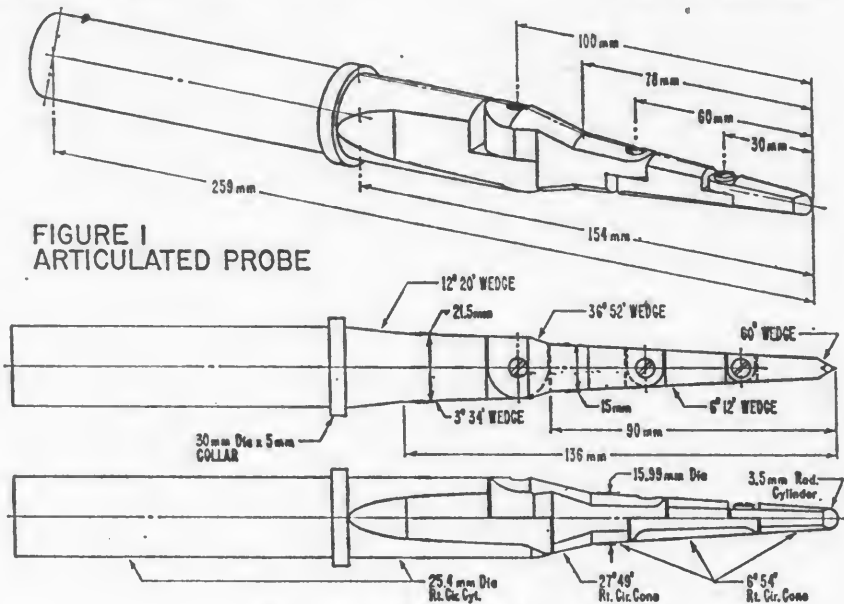


FIGURE 1
ARTICULATED PROBE

[FR Doc.75-227 Filed 1-6-75;8:45 am]

[16 CFR Part 1500]

TOYS AND OTHER CHILDREN'S ARTICLES PRESENTING PUNCTURE OR LACERATION INJURY HAZARDS DUE TO SHARP POINTS**Proposed Banning**

The purpose of this document is to propose regulations (16 CFR 1500.18(a) (17) and 1500.48) that will determine whether toys and other articles intended for use by children 8 years of age or less present an unreasonable risk of personal injury from puncture or laceration hazards due to sharp points and to ban such toys.

Section 2(f)(1)(D) of the Federal Hazardous Substances Act (15 U.S.C. 1261) defines as a hazardous substance any top or other article intended for use by children which is determined by regulation, in accordance with section 3(e)(1) of the act (15 U.S.C. 1262), to present a mechanical hazard as defined by section 2(s) of the act. Section 2(q)(1)(A) provides that such a top or article is a banned hazardous substance.

Existing regulations under 16 CFR 1500.18(a) (1), (2), and (3) ban certain toys that have the potential for causing lacerations, puncture wound injury, aspiration, ingestion or other injury. The Commission will be issuing a series of more specific regulations such as the sharp point regulation proposed herein. It is anticipated that, when finalized, these new regulations will supersede §§ 1500.18(a) (1), (2), and (3).

INJURY DATA

Injury data from the Commission's National Electronic Injury Surveillance System (NEISS) indicate that a significant number of children have required hospital emergency room treatment for laceration and puncture wounds caused by sharp points and sharp edges presented by toys. NEISS comprises approximately two percent of the nation's hospital emergency rooms. During 1973, NEISS reported 1,853 lacerations and punctures occurring to children under ten years of age. This figure represents 54 percent of all NEISS-reported toy injuries to children in this age group. A review of in-depth investigations of a sample of these 1,853 reported injuries discloses the role of sharp points and sharp edges in causing lacerations and punctures. This proposed regulation deals with sharp points; a companion proposal deals with sharp edges.

The injury reports, their sources, and the Bureau of Epidemiology's analysis of injuries related to sharp points on toys may be seen in the Office of the Secretary, CPSC, 10th floor, 1750 K Street NW., Washington, D.C., during working hours Monday through Friday.

The injury patterns indicate to the Commission that many children's articles have sharp points due to poor design or because of excessive tolerances in the manufacturing equipment. Some of these articles may not be so hazardous for older children. The possibility of puncture wounds and laceration injuries increases significantly, however, when sharp points are present on articles in-

tended for use by younger children and when sharp points on such articles appear during normal use or result from reasonably foreseeable damage or abuse.

NBS REPORT

This proposal is based in part on research summarized in a National Bureau of Standards' report entitled "The Skin Puncture Potential of Points Associated with Certain Toys," dated April 27, 1972. The report may be seen in the Office of the Secretary, CPSC, 10th floor, 1750 K Street, NW., Washington, D.C., during working hours Monday through Friday.

The report sets forth a test method for and the results of testing assorted point configurations for ability to puncture skin, recommends a maximum level of sharpness for casual handling conditions, and describes a test device (sharp point tester) capable of distinguishing between sharp and dull points.

The sharp point tester in the NBS report (substantially the same as the device shown in figure 2 of proposed 16 CFR 1500.48 below) was designed to discriminate between sharp and dull points with a recommended maximum level of sharpness. The level of allowable sharpness is based on casual handling conditions for the article.

Developing a device for judging point sharpness required that the limit of allowable sharpness be determined for points on articles that children would contact under casual handling conditions. Casual handling conditions cover the range of activity associated with unpacking, handling, operating, and playing with toys, including foreseeable misuse and types of play not intended by the manufacturer. Such foreseeable misuse does not include throwing or swinging the articles at high velocities.

In determining the limit on sharpness, data from three sources were considered:

1. Subjective evaluation by 50 men and 50 women (nonphysicians) of the sharpness of points for children's articles. Each point was rated as either too sharp, intermediate, or sufficiently dull.

2. Subjective evaluation by 37 physicians of points for children's articles intended for casual handling use. Each point was rated as acceptable or unacceptable.

3. Actual skin puncture tests with points of various configurations.

The results of the two groups, non-physicians and physicians, indicate a similar consideration of sharpness over a range of points.

The skin puncture tests were made on both human and pig skin samples. These tests were done to determine what combinations of point configuration and force are necessary to cause punctures that penetrate the epidermis and dermis but barely enter the subdermis. Curves were plotted to show force as a function of tip radius for both pig and human skin.

SHARP POINT TESTER

Using said criteria of the geometry of sharp points, the National Bureau of Standards developed the above-mentioned sharp point tester as an inspec-

tion tool. Sharp points on toys do not necessarily conform to a conical shape, so the inspection tool was made to be capable of judging an infinite number of possibilities of point geometry. This was done with judgment of a point based upon the penetration into a slot of specified width.

The dimensions found best to fit the curves for the criterion of a sharp point are a slot width of 0.040 inch (1.02 millimeters) and a penetration depth of 0.020 inch (0.51 millimeter). To penetrate skin, a point must maintain a sharp shape while applying force to the skin. For this reason a force factor was included in the penetration criteria of the testing device.

One other factor needed was the dimension for the length of the slot. At some stage, an irregularly shaped point (other than the conical shape) with sufficient length can be considered an edge rather than a point, and the inspection device had to be designed to make this distinction. The conclusion was that a reasonable transition is at an included angle of 120 degrees; that is, if two edges of a piece of sheet metal are such that they meet at an included angle of 120 degrees, the resulting configuration stands at the transition between a point and an edge. Using this and the penetration depth of 0.020 inch (0.51 millimeter), the slot length was set at 0.070 inch (1.78 millimeters).

Accordingly, the operation of the sharp point testing device is based on admitting a sharp point through a rectangular slot measuring 0.040 inch (1.02 millimeters) by 0.070 inch (1.78 millimeters). As the point penetrates to 0.015 inch (0.38 millimeter), it contacts a pressure plate. Further penetration requires moving the plate against a 0.5-pound (2.2-newton) force. If the point is able to move the plate 0.005 inch (0.13 millimeter), thereby giving a total point penetration of 0.020 inch (0.51 millimeter), electrical contact is made to light a bulb indicating the point is sharp. The key parameters of this test are the slot dimensions, the penetration depth, and the level of force resisting the movement of the point.

ARTICULATED PROBE

A sharp point must be accessible to present a hazard; therefore, only toys that meet defined accessibility criteria are subject to the sharp point test. A three-knuckle probe designed by Underwriters Laboratories, Inc. (shown in figure 1 of proposed 16 CFR 1500.48 below) simulates the penetration of a finger into a small slot or hole. The dimensions for the probe are based on the depth of penetration of fingers into slots and holes having respective widths and diameters ranging from 0.125 inch (3.18 millimeters) to 1.0 inch (25.4 millimeters). The data were taken from a study of the finger penetration capacity of 100 men, 100 women, and 100 children. The dimensions used to construct the probe are set such that no more than five percent of the group with the greatest finger penetration (women) could reach into the slots and holes to a length greater than that of the probe.

USE AND ABUSE TESTS

Many toys for younger children do not present sharp point hazards until the toy is broken, dismembered, or disassembled by the child through use or abuse. For this reason, the regulations proposed below require appropriate articles to be subjected to use and abuse test procedures prescribed by 16 CFR 1500.50 through 1500.53 (promulgated elsewhere in this issue of the FEDERAL REGISTER (40 FR 1480)).

Those procedures simulate the use and abuse of toys, games, and other articles intended for children in three age groups (18 months or less, over 18 but not over 36 months, and over 36 but not over 96 months).

The regulations proposed below prescribe testing for sharp points before and after application of the appropriate use and abuse tests.

PROPOSAL

Therefore, the Commission proposes to ban by regulation articles intended for use by children not over 96 months of age that have nonfunctional sharp points and/or contain sharp points that become accessible in normal use or after reasonably foreseeable damage or abuse because the mechanical hazards associated with the design and manufacture of such articles present an unreasonable risk of personal injury to young children from punctures and lacerations. Further, the Commission proposes to exempt from such banning toys with sharp points that perform an operational function, such as needles for toy sewing machines, provided that such items are identified as specified in paragraph (a) (17) and other articles with sharp points that perform an operational function, such as tips on writing instruments. It is contemplated that the effective date will be 180 days after publication of the final regulation in the FEDERAL REGISTER.

Throughout the regulation English figures are followed by their metric approximations. For purposes of compliance with the regulation, the English figures shall be used. The metric approximations are included for convenience and information only.

Accordingly, pursuant to provisions of the Federal Hazardous Substances Act (secs. 2(f)(1)(D), (g)(1)(A), (s), 3(e)(1), 74 Stat. 372, 374, 375, as amended 80 Stat. 1304-05, 83 Stat. 187-89; 15 U.S.C. 1261, 1262) and under authority vested in the Commission by the Consumer Product Safety Act (Pub. L. 92-573, sec. 30(a), 86 Stat. 1231; 15 U.S.C. 2079(a)), the Commission proposes to amend 16 CFR Part 1500 by adding a new paragraph (a) (17) to § 1500.18 and by adding a new § 1500.48, as follows:

1. Section 1500.18 is amended by adding paragraph (a) (17) as follows:

§ 1500.18 Banned toys and other banned articles intended for use by children.

(a) *Toys and other children's articles presenting mechanical hazards.* Under the authority of section 2(f)(1)(D) of the act and pursuant to provisions of section 3(e) of the act, the Commission has determined that the following types of toys or other articles intended for use

by children present a mechanical hazard within the meaning of section 2(s) of the act because in normal use, or when subjected to reasonably foreseeable damage or abuse, the design or manufacture presents an unreasonable risk of personal injury or illness:

(17) Any toy or other article intended for use by children not over 96 months of age (i) that has a sharp point as determined pursuant to § 1500.48 or (ii) that has an accessible component that has such a sharp point or (iii) that has such a sharp point resulting from tests prescribed by §§ 1500.51, 1500.52, and 1500.53 (use and abuse test procedures). Toys such as toy sewing machines that (iv) by reason of their functional purpose necessarily present the hazard of sharp points and (v) do not have any nonfunctional sharp points are exempt from this paragraph (a) (17) provided that the toy is identified at time of sale as having functional sharp points. Other articles intended for use by children such as writing instruments that (vi) by reason of their functional purpose necessarily present the hazard of sharp points and (vii) do not have any nonfunctional sharp points are exempt from this paragraph (a) (17).

2. Section 1500.48 is added as follows:

§ 1500.48 Test method for determining a sharp point in toys and other articles intended for use by children not over 96 months of age.

(a) *Objective.* The sharp point test prescribed by paragraph (d) of this section will determine whether or not points on toys and other articles intended for use by children not over 96 months of age, and points exposed in normal use or as a result of reasonably foreseeable damage or abuse of such toys and articles, present an unreasonable risk of injury by puncture or laceration. The test methods specified in §§ 1500.51, 1500.52, and 1500.53 are designed to expose potential hazards that would result from such normal use of reasonably foreseeable damage or abuse.

(b) *Application.*—(1) *General.* The sharp point test of paragraph (d) of this section shall be applied to a toy or other article intended for use by children not over 96 months of age if its design or construction could present an unreasonable risk of injury by puncture or laceration. The sharp point test shall be applied to the sample before and after subjecting the sample to the appropriate tests of §§ 1500.51, 1500.52, and 1500.53.

(2) *Testing of wires.* Wires with potentially sharp points shall be tested by rigidly fastening the wire in a vise at a location of 0.25 inch (6.4 millimeters) along the wire from the point being subjected to the sharp point test.

(c) *Accessibility.* Any point that can be contacted by a child in normal use or after reasonably foreseeable damage or abuse of the toy shall be subject to the sharp point test of paragraph (d) of this section. Points that can be contacted through an opening large enough to pass a 1.00-inch (25.4-millimeter) diameter cylinder shall be considered ac-

cessible to a child and shall be subjected to the sharp point test. Points accessible through an opening having smaller dimensions shall be tested for accessibility by use of the probe shown in figure 1 of this section. The probe shall be used by inserting the tapered end into the opening. The knuckle joints of the probe can be rotated up to 90 degrees from the center line and are designed to simulate knuckle movement. Any point that can be contacted by the portion of the probe forward of the collar shall be subject to the sharp point test.

(d) *Sharp point test.*—(1) *Principle of operation.* The sharp point tester shown in figure 2 of this section, or any device utilizing the same reference dimensions and yielding precisely equivalent results, shall determine a sharp point. The principle of operation is as follows: A rectangular opening measuring 0.040 ± 0.001 inch (1.02 ± 0.02 millimeters) wide by 0.070 ± 0.001 inch (1.78 ± 0.02 millimeters) long in the end of the slotted cap establishes two reference dimensions. Depth of penetration of the test point determines sharpness. If the test point penetrates the slotted cap a distance of 0.020 ± 0.001 inch (0.51 ± 0.02 millimeter) or more and maintains its original shape while under a force of at least 0.5 pound (2.2 newtons), the point shall be classified as sharp.

(2) *Procedure.* (i) The toy to be tested shall be held in a manner so that the point does not move during the test. In most cases, it will not be necessary to support the point directly; however, if this is done, support shall not be given closer than 0.25 inch (6.4 millimeters) from the point.

(ii) Part of the toy may need to be removed to allow the sharp point testing device to test a point that is reached by the probe. Such dismantling of the toy could affect the rigidity of the point in question. The sharp point test shall be done with the point supported so that its stiffness approximates the point stiffness in the assembled toy, except as provided by paragraph (b) (2) of this section.

(iii) The components for adjusting and operating the sharp point tester are shown in figure 2 of this section. Hold the sharp point tester and loosen the locking by rotating it so that it moves toward the indicator lamp assembly a sufficient distance to expose the calibration reference mark on the barrel. Rotate the gaging cap clockwise until the indicator lamp lights. Rotate the cap counterclockwise until an equivalent of five divisions (the distance between the short lines on the cap) have passed the calibration reference mark. Lock the gaging cap in this position by rotating the locking until it fits firmly against the cap. Insert the point, in a direction judged to be most rigid for the point, into the cap slot and use a force sufficient to depress the spring as far as possible without shaving the point on the edges of the slot or extruding the point through the slot. A red glowing light indicates that the point is sharp.

(e) For purposes of compliance with the test method prescribed by this section, the English figures shall be used.

The metric approximations are provided in parentheses for convenience and information only.

Interested persons are invited to submit, on or before March 10, 1975, written comments regarding this proposal. Comments and any accompanying data or material should be submitted, preferably in five copies, addressed to the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207. Comments may

be accompanied by a memorandum or brief in support thereof. Received comments may be seen in the Office of the Secretary, 10th floor, 1750 K Street NW., Washington, D.C., during working hours Monday through Friday.

Dated: December 30, 1974.

SADYE E. DUNN,
Secretary, Consumer Product
Safety Commission.

comments on the proposed effective date and the proposed amendments in accordance with the last paragraph of this document.

BACKGROUND

The bicycle banning and safety regulations were proposed by the Commissioner of Food and Drugs in the FEDERAL REGISTER of May 10, 1973 (38 FR 12300), under provisions of the Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) and a delegation of authority from the Secretary of Health, Education, and Welfare (21 CFR 2.120).

On May 14, 1973, the authority to issue regulations under the Federal Hazardous Substances Act was transferred to the Consumer Product Safety Commission by section 30(a) of the Consumer Product Safety Act (86 Stat. 1231; 15 U.S.C. 2079(a)).

In the FEDERAL REGISTER of July 16, 1974 (39 FR 26100), the Commission promulgated 16 CFR Part 1512, a regulation prescribing safety requirements for bicycles, and 16 CFR 1500.18(a)(12), a regulation classifying any bicycle introduced into interstate commerce after January 1, 1975, that does not meet the requirements of 16 CFR Part 1512 as a banned toy or article intended for use by children.

Introduction or receipt in interstate commerce of any banned toy or article intended for use by children is prohibited by section 4 of the Federal Hazardous Substances Act (15 U.S.C. 1263) and is made punishable by fine or imprisonment or both by section 5 of the act (15 U.S.C. 1264). Additionally, section 6 of the act (15 U.S.C. 1265) authorized seizure of any such toy or article introduced into interstate commerce, and section 15 of the act (15 U.S.C. 1274) and a regulation promulgated thereunder (16 CFR 1500.202) require repurchase of any banned toy or other article intended for use by children that is introduced into interstate commerce.

REACTION TO PROMULGATION

After promulgation of the bicycle regulations on July 16, 1974, the Commission received more than 50 written communications thereon. Several of these objected to various provisions of the regulations and requested a public hearing under 16 CFR 1500.201. After consideration of these communications, the Commission concluded that 16 CFR 1500.201 was not applicable to the bicycle regulations and that it would treat these communications as petitions to amend the regulations. Although the Commission determined that a public hearing in accordance with 16 CFR 1500.201 was not required, it directed its staff to conduct a public meeting with all interested parties to receive information relevant to the petitions for amendment of the regulations.

After notice of the meeting was published in the FEDERAL REGISTER on September 3, 1974 (39 FR 31943), member of the Commission staff met with interested parties on September 9 and 10, 1974. Copies of all petitions concerning the bicycle regulations received after July 16, 1974 and a transcript of the presentations made at the public meeting are

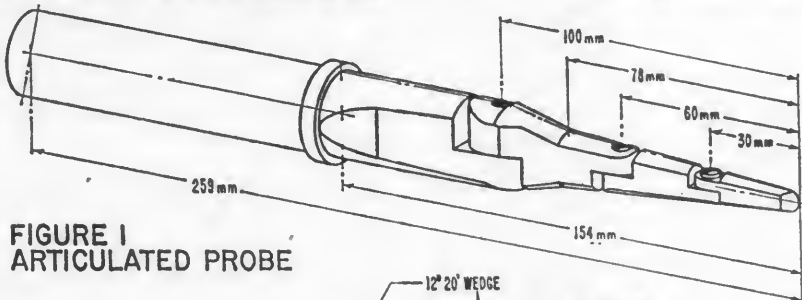
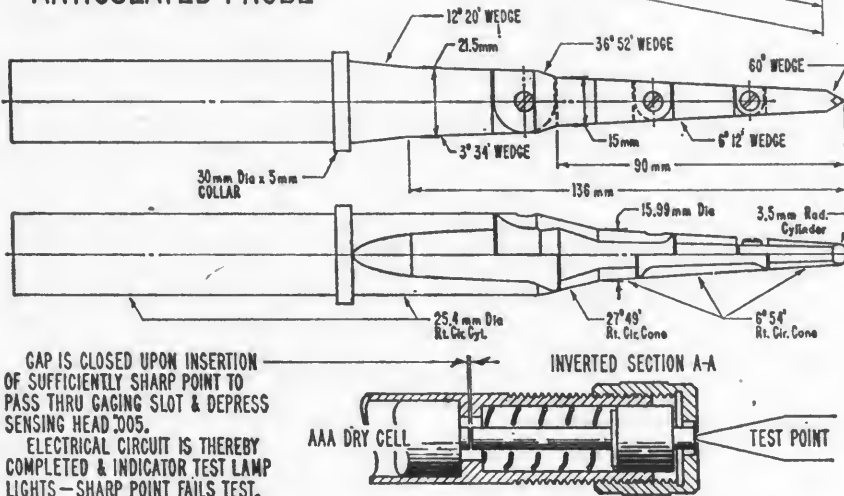


FIGURE 1
ARTICULATED PROBE



GAP IS CLOSED UPON INSERTION OF SUFFICIENTLY SHARP POINT TO PASS THROUGH GAGING SLOT & DEPRESS SENSING HEAD 005. ELECTRICAL CIRCUIT IS THEREBY COMPLETED & INDICATOR TEST LAMP LIGHTS—SHARP POINT FAILS TEST.

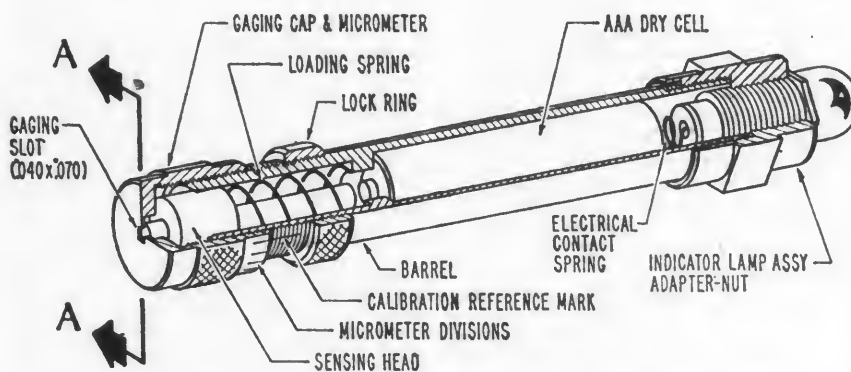


FIGURE 2—SHARP POINT TESTER

[FR Doc. 75-226 Filed 1-6-75; 8:45 am]

[16 CFR Parts 1500, 1512]
BICYCLE BANNING AND SAFETY REGULATIONS

Proposed Amendments and Effective Date

The purpose of this document is to propose an effective date for the bicycle banning and safety regulations (16 CFR

1500.18(a)(12) and 16 CFR Part 1512) and to propose amendments concerning the crank differential of bicycles equipped with footbrakes, the handlebar stem-to-fork clamp test, chain guards, and instructions and labeling. The proposed effective date is May 7, 1975. All interested parties are invited to submit written

available for inspection in the Office of the Secretary, 10th floor, 1750 K Street, NW., Washington, D.C.

EFFECTIVE DATE

Several petitioners state that the regulations' effective date (January 1, 1975) will not allow adequate time for redesign, retooling, testing, production, and shipment of complying components and bicycles, and request extension of the effective date to July 1, 1975. After considering the matters stated in the petitions and at the public meeting, the Commission concludes that the effective date of January 1, 1975, would impose an unreasonable burden on domestic and foreign manufacturers. In a document published in the FEDERAL REGISTER of December 16, 1974 (39 FR 43536), the Commission has suspended the effective date of the bicycle banning and safety regulations until further notice.

In the interest of protecting the public from unreasonable risks of injury associated with bicycles, the Commission desires to make the regulations effective on the earliest date practicable.

Accordingly, the Commission (1) proposes by May 7, 1975 a document in the FEDERAL REGISTER acting on this proposal as the effective date for the regulations; and (2) proposes to amend 16 CFR 1500.18(a)(12) to make the provisions of 16 CFR Part 1512 applicable to bicycles introduced into interstate commerce on or after the new effective date.

BICYCLE IDENTIFICATION

To facilitate enforcement of the bicycle safety regulations, the Commission proposes to amend 16 CFR 1512.19 by adding paragraph (e) to require that bicycles subject to the regulations bear a permanent marking on the bike frame from which it shall be possible for the manufacturer to specify the month and year of manufacture or for a private labeler to identify the manufacturer and the month and year of manufacture. The date of manufacture is defined in the proposal as the completion by the manufacturer of those construction and assembly operations that are performed by the manufacturer before the bicycle is shipped for sale to distributors, retailers, or consumers.

The Commission anticipates that in the future the regulations may be amended by rulemaking to change existing requirements or to add new ones. Bicycles introduced into interstate commerce after the effective date of any such future amendment would be subject to the requirements imposed by that amendment. The purpose of proposed § 1512.19(e), which requires a means of identifying the month and year of manufacture, is so that the Commission, manufacturers, and private labelers can ascertain quickly the requirements which were in effect at the time any given bicycle was manufactured.

COMPLIANCE LABELING

In the FEDERAL REGISTER of July 16, 1974 (39 FR 26113), the Commission proposed to amend 16 CFR 1512.19 by adding paragraph (d) to require nonpermanent labeling of bicycles subject to the provisions of 16 CFR Part 1512 to indicate

compliance with all applicable Commission regulations. While the Commission has not yet taken final action on proposed § 1512.19(d), the Commission contemplates that the requirements of proposed § 1512.19(e) below would be in addition to, rather than in lieu of, any requirements of proposed § 1512.19(d) that may be adopted. Persons wishing to supplement comments previously submitted concerning proposed paragraph (d), or submit new comments, may do so during the comment period specified herein.

FOOTBRAKE CRANK DIFFERENTIAL

Many of the petitions and oral presentations at the public meeting also contain objections to various requirements of the regulations. Several petitioners object to the provisions in § 1512.5(c)(3) requiring that a torque of 13.6 N-m (10 ft-lb) be applied to the crank in both the drive and braking positions when measuring the crank differential of bicycles equipped with footbrakes. These petitioners state that no torque was specified in the original proposed regulations and that interested parties were not given an opportunity to comment on the requirement for application of 13.6 N-m (10 ft-lb) torque in each position.

The Commission proposes below to amend 16 CFR 1512.5(c)(3) to require that the differential angle between the drive and brake positions of the crank not exceed 60 degrees and be measured with the crank held against each position under a torque of 13.6 N-m (10 ft-lb). This requirement is substantially the same as that of 16 CFR 1512.5(c)(3) promulgated July 16, 1974, and is proposed below to provide opportunity for comment by interested parties.

CHAIN GUARDS

Several petitioners object to the provisions of § 1512.9(a) requiring that the chain guard be capable of preventing a rod of a specified size from becoming entrapped between the upper junction of the drive chain and the drive sprocket when the rod is introduced in any direction within 45 degrees from a line perpendicular to the drive sprocket from the side of the bicycle on which the drive chain is located. These petitioners state that such a requirement was not present in the regulation proposed on May 10, 1973, that no opportunity was given to interested parties to comment on the requirements for chain guards in the promulgated regulation.

Some of these petitioners also object to the provision in § 1512.9(a) imposing the requirement for a chain guard on those bicycles having a single sprocket ratio that cannot be freewheeled in a direction opposite to the drive direction. These petitioners state that almost all bicycles that have a single drive sprocket (including those not equipped with coaster brakes that can be pedaled in a direction opposite to the drive direction) do not have any mechanism that will relieve tension on the drive chain to prevent injury should a part of the rider's body or clothing become entrapped between the drive chain and the drive sprocket. These petitioners allege that

said provision of § 1512.9(a) would permit a large number of three-speed and five-speed bicycles not equipped with coaster brakes to be manufactured without chain guards and would therefore increase, rather than reduce, unreasonable risks of injury associated with bicycles.

The Commission proposes below to amend section 1512.9(a) to require bicycles with a single drive sprocket to have a chain guard. This would make the requirement for a chain guard applicable to all bicycles with a single drive sprocket, rather than limit the requirement to bicycles with a single drive sprocket that cannot be pedaled in a direction opposite to the drive direction as prescribed by § 1512.9(a) promulgated July 16, 1974.

The proposed amendment below specifies that the chain guard shall cover the top strand of the drive chain and at least 50 percent of the perimeter where the drive chain contacts the drive sprocket. The Commission intended to include this requirement in the regulations promulgated July 16, 1974; however, inadvertently, § 1512.9(a) required only that the upper junction of the drive chain and drive sprocket be guarded. The requirement that the chain guard cover the top strand of the drive chain has been added to reduce the risk of injury that could result if a part of the rider's body or clothing became entrapped between the drive chain and the rear-most part of the chain guard or were carried into the junction of the chain and drive sprocket by the forward movement of the chain when the bicycle is pedaled in the drive direction. The requirement that the chain guard cover at least 50 percent of the perimeter where the drive chain contacts the drive sprocket has been added to prevent clothing from becoming entrapped between the drive chain and the front-most part of the chain guard when the pedals are turned in a direction opposite to the drive direction, and thus prevent injury to the rider.

The requirement that the chain guard be capable of preventing a rod with a diameter of 9.4 mm ($\frac{3}{8}$ in.) and a length 76 mm (3.0 in.) from becoming entrapped between the upper junction of the chain and the drive sprocket is the same in the proposed amendment below as that in the regulation promulgated July 16, 1974.

HANDLEBAR STEM-TO-FORK CLAMP

Several petitioners state that the requirements of § 1512.18(h)(1) that the handlebar stem-to-fork clamp of a bicycle withstand a torque of 67.5 N-m (50 ft-lb) and that the handlebar stem-to-fork clamp of a sidewalk bicycle withstand a torque of 47.2 N-m (35 ft-lb) are substantially changed from the requirements of the original proposed regulation, which required that the handlebar stem-to-fork clamp of a bicycle withstand a torque of 47.2 N-m (35 ft-lb) and the handlebar stem-to-fork clamp of a sidewalk bicycle withstand a torque of 20.4 N-m (15 ft-lb). These comments object to the absence of any opportunity to comment on the increased torque values specified in the promul-

gated regulation. Many of these petitioners also express the opinion that the torque values specified in the regulations promulgated July 16, 1974, are excessive and impracticable.

Following publication of the proposed regulations on May 10, 1973, the Commission received reports of accidents that resulted after bicycle handlebar stem-to-fork assemblies had been damaged by overtightening of the stem bolts. In an effort to provide a margin of safety against such accidents, the Commission increased the torque values to the levels specified in the regulations promulgated July 16, 1974.

After considering the objections to the increased torque values in the petition and oral presentations at the public meeting, the Commission has concluded that a more direct approach to reducing the risk of injury to the bicycle rider presented by a damaged stem-to-fork assembly caused by overtightening the stem-bolt would be to require an explicit warning in the instruction manual about the danger of damaging the stem-to-fork assembly and the risk of injury to the rider which can result from overtightening the stem-bolt, and a simple, clear and precise statement of the procedures to be followed to avoid damaging the stem-to-fork assembly when tightening the stem-bolt.

Accordingly, the Commission proposes to amend § 1512.18(h) (1) to provide that such a warning and directions must be included in the instruction manual.

The Commission further proposes to amend § 1512.18(h) (1) to require that the stem-to-fork clamp must be able to prevent movement when a torque of 47.2 N-m (35 ft-lb) is applied about the stem axis of a bicycle or when a torque of 20.4 N-m (15 ft-lb) is applied about the stem axis of a sidewalk bicycle. These are the torque values specified in the regulation proposed on May 10, 1973. Additionally, proposed § 1512.18(h) (1) requires that after application of the specified torque, the handlebar stem-to-fork assembly shall be disassembled and its component parts shall be inspected for structural damage including cracking, splitting, excessive galling, gouging, scoring, bulging of the stem and fork structures, stripping of threads, and bearing damage. No visible signs of damage to the stem-to-fork assembly or any of its component parts may be present.

PROPOSAL

Accordingly, pursuant to provisions of the Federal Hazardous Substances Act (secs. 2(f) (1) (D), (q) (1) (A), (s), 3(e) (1), 74 Stat. 372, 374, 375, as amended 80 Stat. 1304-05, 83 Stat. 187-89; 15 U.S.C. 1261, 1262) and under authority vested in the Commission by the Consumer Product Safety Act (Pub. L. 92-573, sec. 30(a), 86 Stat. 1231; 15 U.S.C. 2079(a)), the Commission proposes to revise 16 CFR 1500.18(a) (12) and 16 CFR 1512.6(e), 1512.9(a), and 1512.18(h) (1) and proposes to add 16 CFR 1512.19(e) as

follows (although unchanged, the introductory test of 16 CFR 1500.18(a) is included below for context and 16 CFR 1512.5(c) (3) is included for comments):

§ 1500.18 Banned toys and other banned articles intended for use by children.

(a) *Toys and other children's articles presenting mechanical hazards.* Under the authority of section 2(f) (1) (D) of the act and pursuant to provisions of section 3(e) of the act, the Commission has determined that the following types of toys or other articles intended for use by children present a mechanical hazard within the meaning of section 2(s) of the act because in normal use, or when subjected to reasonably foreseeable damage or abuse, the design or manufacture presents an unreasonable risk of personal injury or illness:

(12) Any bicycle as defined in § 1512.2 (a) of this chapter (except a bicycle that is a "track bicycle" or a "one-of-a-kind bicycle" as defined in § 1512.2(d) and (e) of this chapter) that is introduced into interstate commerce on or after (May 1, 1975, or 120 days after publication of a document in the FEDERAL REGISTER acting on this proposal, whichever is later) and that does not comply with the requirements of Part 1512 of this chapter.

§ 1512.5 Requirements for braking system.

(c) *Footbrakes.* * * *
(3) *Crank differential.* The differential between the drive and brake positions of the crank shall be not more than 60° with the crank held against each position under a torque of no less than 13.6 N-m (10 ft-lb).

§ 1512.6 Requirements for steering system.

(e) *Handlebar and clamps.* The handlebar and clamps shall be tested in accordance with the handlebar test, § 1512.18(h). Directions for assembly of the bicycle required in the instruction manual by § 1512.19(a) (2) shall include an explicit warning about the danger of damaging the stem-to-fork assembly and the risk of injury to the rider which can result from overtightening the stem-bolt. The directions for assembly shall also contain a simple, clear and precise statement of the procedure to be followed to avoid damaging the stem-to-fork assembly when tightening the stem-bolt.

§ 1512.9 Requirements for protective guards.

(a) *Chain guard.* Bicycles having a single front sprocket shall have a chain guard that shall cover the top strand of the chain and at least 50 percent of the perimeter where the drive chain contacts the drive sprocket. Such chain guard

shall prevent a rod of 9.4 mm ($\frac{3}{8}$ in.) diameter and 76 mm (3.0 in.) length from entrapment between the upper junction of the chain and the sprocket when introduced from the chain side of the bicycle in any direction within 45° from a line normal to the sprocket.

§ 1512.18 Test and test procedures.

(h) *Handlebar test.* (Ref. § 1512.6(e))

(1) *Stem-to-fork clamp test—(1) Procedure.* The handlebar and handlebar stem shall be assembled in accordance with the manufacturer's instructions. The handlebar-fork assembly shall be subjected to a torque applied about the axis of the stem, and shall then be disassembled and examined for signs of structural damage including cracking, splitting, excessive galling, gouging, scoring, bulging of the stem and fork structures, stripping of threads, and bearing damage.

(ii) *Criteria.* There shall be no visible movement between the stem and fork when a torque of 47.2 —0^{+2.7} N-m (35 —0^{+2.7} ft-lb) for bicycles and 20.4 —0^{+2.7} N-m (15 —0^{+2.7} ft-lb) for sidewalk bicycles is applied to the handlebar about the stem-to-fork axis. There shall be no visible signs of damage to the stem fork assembly or any component part thereof.

§ 1512.19 Instructions and labeling.

(e) Every bicycle subject to the requirements of this Part 1512 shall bear a permanent marking on the bike frame identifying the name of the manufacturer or private labeler. Each frame shall also bear some form of permanent marking from which it shall be possible for the manufacturer to identify the month and year of manufacture or for a private labeler to identify the manufacturer and month and year of manufacture.

For purposes of this paragraph the term "manufacture" means the completion by the manufacturer of a bicycle of those construction assembly operations that are performed by the manufacturer before the bicycle is shipped from the manufacturer's place of production for sale to distributors, retailers, or consumers.

Interested persons are invited to submit, on or before February 6, 1975, written comments regarding this proposal. Comments and any accompanying data or material should be submitted, preferably in five copies, addressed to the Secretary, Consumer Product Safety Commission, Washington, D.C. 20207. Comments may be accompanied by a memorandum or brief in support thereof. Received comments may be seen in the Office of the Secretary, 10th floor, 1750 K Street, NW., Washington, D.C., during working hours Monday through Friday.

Dated: December 31, 1974.

SADYE E. DUNN,
Secretary, Consumer Product
Safety Commission.

[FR Doc.75-225 Filed 1-6-75; 8:45 am]

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