OS# 3365

UNITED STATES GOVERNMENT

MEMORANDUM

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CONSUMER PRODUCT SAFETY COMMISSION

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

DATE: SEP 21 1993

TO : The Commission

Through: Sadye E. Dunn, Secretary
Eric C. Peterson, Executive Director

FROM : Jerry G. Thorn, General Counsel
Stephen Lemberg, Assistant General Counsel
Allen F. Brauninger, Attorney, OGC

SUBJECT: Strangulation hazards associated with crib toys

VOTE SHEET

A briefing package from the staff discusses options for Commission action with regard to a rulemaking proceeding initiated in 1990 to consider strangulation hazards associated with crib toys. The staff recommends that the Commission terminate the proceeding. A separate memorandum from the Office of the General Counsel discusses legal issues presented by the briefing package.

Please indicate your vote:

I Terminate the proceeding; direct the staff to draft an appropriate Federal Register notice for approval by the Commission.

_____ _____
Signature Date

II Continue the proceeding; direct the staff to draft a notice of proposed rulemaking for approval by the Commission.

_____ _____
Signature Date

NOTE: This document has not been reviewed or accepted by the Commission.
Initial NH Date 9/21/93

CPSA 6 (b)(1) Cleared 9/24/93 WITH GC MEMO TAB H REMOVED.
___ No Mfrs/Prvtlbl Products Identified
X Excepted by FWPR
___ Firms Notified,

III Take other action (please specify):

_____

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_____ _____

Signature Date

BRIEFING PACKAGE
CRIB TOYS

For Further Information Contact:

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Human Factors Division
Directorate for Epidemiology
(301) 504-0468

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EXECUTIVE SUMMARY

In 1990, the U.S. Consumer Product Safety Commission (CPSC) granted a petition from the Consumer Federation of America and the Attorney General of New York to ban certain crib toys posing strangulation hazards to young children. The Commission published an Advance Notice of Proposed Rulemaking (ANPR) with eight ban requests. In addition, CPSC staff in the Division of Human Factors completed a literature and injury data analysis and concluded that available data were insufficient to identify and distinguish objectively between hazardous and non-hazardous protrusions on crib toys and other children's products.

According to Commission data, the number of strangulation deaths to children associated with crib toys is less than two per year. The staff has information about one permanent injury associated with crib toys during the past 20 years. Estimated annual sales of crib toys are in the range of 10 to 25 million units.

CPSC staff has been actively participating in the revision of the current ASTM F963 Standard Consumer Safety Specification on Toy Safety which includes provisions for crib and playpen toys. With the exception of the string length issue, most of the proposed changes will adequately address the major areas of concern presented in the ANPR.

The staff recommends that the Commission withdraw the ANPR crib toys and direct staff to continue working with ASTM to develop satisfactory string length requirements.

OS#3365

UNITED STATES GOVERNMENT

MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON,D.C. 20207

SEP 21 1993

TO: The Commission

Through: Sadye E. Dunn, Secretary
Jerry G. Thorn, General Counsel
Eric C. Peterson, Executive Director
Bert G. Simson, Assistant Executive Director for Hazard Identification and Reduction
Dr. Robert D. Verhalen, Associate Executive Director Directorate for Epidemiology
Jacqueline Elder, Director, EPHF

FROM: Celestine M. Trainor, Project Manager, EPHF, 504-0468

SUBJECT: Options on Crib Toys

The purpose of this memorandum is to provide the Commission with the staff response to comments received on the Advance Notice of Proposed Rulemaking (ANPR) on crib toys and to provide the Commission with options for addressing the hazards presented by crib toys.

I. BACKGROUND

In 1990, the Consumer Product Safety Commission (CPSC) granted a petition from the Consumer Federation of America and the Attorney General of New York to ban certain crib toys posing strangulation hazards to young children. The petition was based on two reports from the Directorate for Epidemiology. These reports were completed in 1987 as part of the Commission's Ligature Strangulation project. The reports were from the Division of Human Factors, ("Human Factors Evaluation of Provisions Which Address Crib Toy Strangulations in the Toy Safety Voluntary Standard," Shelley Waters Deppa, July 1987) (Tab A), and from the Division of Hazard Analysis (memorandum from Debbie Tinsworth to Elaine Tyrrell, "Strangulation-Related Incidents Involving Crib Toys," June 22, 1987) (Tab B).

The Commission published an ANPR in October 1990 (Tab C). It announced eight specific ban requests (Table I) to address risks of strangulation associated with crib and playpen toys. The Commission received 17 comments on the ANPR (Tab D).

CPSA 6 (b)(1) Cleared 9/21/93 TSV WITH GC MEMO +
TAB H REMOVED
No Mfrs/PrvtLblrs or Products Identified
Excepted by ANPR

Table I Key to Ban Requests as listed in ANPR.

Number	Request
1	Ban any manipulative crib toy with a horizontal suspension member, unless (a) horizontal member is rigid and can be attached at or above height of the crib side rails; (b) the horizontal member does not have vertical protrusion; and (c) the toy is labeled with the following statement: **Warning** Always use both ends attached to opposite crib sides. Child could strangle on unconnected end.
2	Ban any crib toy with vertical strings 6 inches or longer.
3	Ban any crib toy with cords or other components which form a perimeter greater than 14 inches.
4	Ban any crib toy with any protrusion which can catch an infant's clothing or other item worn by an infant.
5	Ban any crib toy with a pull ring attached to a cord.
6	Ban any crib mobile that can be located within reach of an infant not capable of pushing up on hands or knees when inside the crib.
7	Ban any mobile that can be attached to a crib unless the following statement appears clearly and conspicuously on the product, its packaging, and as the first item in any instructions accompanying the product: **Warning** Keep toy away from baby's reach. Remove mobile and attachment clamp (and music box attachment, if applicable) when baby becomes 5 months of age or begins to push up on hands or knees. Child could strangle if clothing, head or neck gets caught on toy part.
8	Ban any crib toy which fails to include a conspicuous warning as the first item in any instructions accompanying the product to advise that when the toy is used in the crib, the crib sides should be raised and the crib mattress should be in one of the lower positions, or a strangulation hazard may result.

II. DISCUSSION

The term "crib toy" encompasses a variety of items. In the ANPR, crib toys were defined as "toys which are intended to be attached to or near a crib or playpen for use by children younger than two years of age." This definition did not intend to include toys that generally would be used loose in the crib or playpen. The age specification of up to 2 years was chosen because the victims in the incidents ranged from 1 month to 2 years of age. Most attached crib and playpen toys, however, lose their appeal when children are between 12 and 18 months old. By this age, children are mobile and are interested in toys that involve more gross motor skills.

A. Description of products and ban request associated with product

Toys intended to be strung across the crib or playpen

Toys intended to be strung across the crib or playpen are often referred to as crib gyms, crib exercisers, or crib kickers. Typically, they are constructed with strings/cords and string-like fasteners which allow them to be fastened to the crib rails. Ban requests #1, #2, #3, #4, #5, and #8, as described in Table 1, apply to this type of toy.

Toys attached to the side of the crib or playpen

These toys are usually called activity boxes or busy boxes. They are intended to be attached to one side of the crib or playpen, and most can also be played with flat on the floor or in the crib or playpen. These toys have multiple features which the infant can manipulate. Ban requests #2, #3, #4, #5, and #8 address these toys.

Crib Mobiles

Crib mobiles are intended to hang above the crib or playpen out of reach of the child. They are not intended to be touched or manipulated by the child. Mobiles are covered by ban requests #2, #3, #4, #6 and #7.

Pull Rings

Pull rings can be found as a component of a multiple activity box or crib gym, or on a single function pull-cord activated toy. Ban request #5 addresses this issue.

B. Incident Data

Staff in the Division of Hazard Analysis reports that between January 1973 and February 1993, there were 28 strangulation deaths to children under 2 years of age involving crib toys (Tab E). Two of the deaths have been reported since the issuance of the ANPR in 1990. Below is a breakdown of the incident data by toy type.

	Incidents		
	Total	Death	Non-Fatal
Total	48	28	20
Toy Type			
Toys Intended to be Strung Across the Crib or Playpen	27[1/]	13[1/]	14
Toys Attached to Side of Crib or Playpen	7[1/]	3	4[1/]
Toys Hung from Crib Cornerpost (cords that form a loop)	4	3	1
Mobiles	3	2	1
Toys Attached to Cribs, Unknown	7[1/]	7[1/]	-

1/ Includes incident reported since issuance of ANPR in 1990

C. Human Factors Analysis

Toys intended to be strung across the crib or playpen

Typically, toys intended to be strung across the crib or playpen are constructed with straps and string-like fasteners which may allow them to be installed so as to create potentially hazardous situations. In addition, they may be left in the crib or playpen longer than recommended (i.e., 5 months or when child begins to push up on hands and knees) because children are just beginning to play with the toys when it is recommended that they be removed.

The straps and cords that are used to fasten crib gyms across the crib or playpen or to hold manipulative toys are potentially hazardous in two ways: (1) when they droop into the crib and playpen, and (2) when one end is attached and the other is loose in the crib. The drooping toy is hazardous to the active child who is able to get his/her neck across the toy but

is not able to lift his/her head and neck off the toy. When part of the toy is loose and the other side is attached, a child may roll across the string/cord and become entangled in the toy creating pressure on the neck.

The 1987 Human Factors' report (Tab A) recommended restricting the design of manipulative crib toys (crib gyms) to the use of rigid horizontal members. This recommendation was intended to remove the strangulation hazard (i.e., neck over the toy) associated with toys drooping into the crib, thus eliminating the need to remove the toy when the children turned 5 months of age. However, after further consideration staff is concerned that this requirement may actually present new hazards. Allowing the toy to be left in the crib or playpen after 5 months may provide children with a means to help them climb out of their cribs. In addition, there is a potential head entrapment hazard if a rigid horizontal member is installed in the crib in such a way that it creates an opening between the toy and crib end panel large enough for children's heads to enter in one orientation, but not large enough for their heads to exit in another orientation.

The Human Factors' report also recommended restricting vertical protrusions on horizontal members because children's clothing has caught on these protrusions causing strangulations. In a more recent Human Factors' paper, "Characteristics of Catch Point Incidents Contributing to Strangulation on Crib Toys and Other Children's Products" (1992) (Tab F), staff undertook a technical analysis of the injury data and literature to identify generic characteristics of hazardous protrusions. With that information, test methods and fixtures for distinguishing between hazardous and non-hazardous protrusions were to be developed. However, the literature and injury data analysis indicated that available data were insufficient to identify and distinguish objectively between hazardous and non-hazardous protrusions.

Crib gyms need to be designed so that they do not droop into the crib and so they do not cause a strangulation hazard if children do fall across them. Breakaway fasteners are a potential solution but may be difficult to test objectively because of variability in their location and questions regarding how and where force should be applied during testing.

Crib gyms, exercisers, and kickers appeal to children after 5 months and, therefore, a label recommending removal at 5 months appears to be contradictory. However, staff is not aware of any technical fix that would eliminate all hazardous situations to allow this type of toy to be left in the crib or playpen after the child is able to push up on hands and knees.

String lengths on crib and playpen toys

The staff originally recommended a maximum string length of 6 inches, based on anthropometric data and allowing for tissue compression because of the string tightening around the neck. After further study, that recommendation was revised to 7 inches (Tab G). The neck circumference for a 5th percentile 0- to 3-month-old child, the smallest likely user, is 7.2 inches. Staff judges it is not necessary to allow for tissue compression because, if the string cannot get around the neck to become entangled, then it would not cause tissue compression. Therefore, a maximum string length of 7 inches would be sufficient to prevent strings from wrapping around children's necks and becoming tangled.

Toys attached to the side of the crib or playpen

In addition to strangulation from long strings, these toys have two hazards associated with them: protrusions and head entrapment. Similar to the protrusion hazard involving toys strung across a crib or playpen, children's clothing has caught on protrusions on these toys causing strangulations. As previously indicated, there is no known objective way to distinguish between hazardous and non-hazardous protrusions at this time.

Head entrapment can be addressed. Some of these crib toys have strings and other components which can form the perimeter of an opening large enough to permit a child's head to enter and become entrapped, thereby creating a strangulation hazard. The head circumference of the smallest children exposed to crib toys is 14 inches. Limiting the length of individual strings will not avoid this hazard. By limiting the perimeter of any opening formed by multiple strings and other components of a crib toy to 14 inches or less, this entrapment and strangulation hazard can be eliminated.

Crib Mobiles

Unlike crib gyms, mobiles are not intended to be manipulated or touched by children. Some consumers, however, may leave a mobile on the crib even when the child is able to reach and touch it. Mobiles are potential hazards whenever the hanging items or protrusions on the base are within contact of the children. A label on the mobile advising consumers of the potential hazard and how to prevent the hazard may provide the needed information to reinforce what is generally understood (i.e., keep out of reach) and to remind consumers to move the mobile out of reach. Mobiles should be removed from the crib when children are 5 months old or begin to push up on hands and knees.

Some mobiles are designed to be attached to the wall or ceiling, thus allowing them to be left in the room. In these cases, the mobiles should be installed out of a standing child's reach. Since children vary in height, a specific distance is not recommended, but the statement "out of baby's reach" should be sufficient to convey the message.

Crib toys with pull rings

CPSC has received one report of a death involving a crib toy with a pull ring. In that case, the child got his hand and arm stuck through the ring. When he rolled over the string encircled his neck. This entanglement hazard can be addressed by restricting the length of the pull cord. Staff recommends string lengths of 7 inches or less on any crib or playpen toy.

Labeling on crib toys

There are several factors which indicate that labeling alone may not be effective in reducing the potential strangulation hazard associated with catch points on manipulative crib toys (Tab F). The technical literature on labeling, however, notes that labeling effectiveness can be enhanced by a complementary information and education campaign. For a number of years the CPSC has distributed information on crib toys and the potential hazards associated with them. This information has been in the form of safety alerts, notices to pediatricians, baby safety information, and the Holiday Toy Safety news conferences. It is anticipated that these efforts will continue. These activities, in conjunction with the more conspicuous and explicit labeling proposed in the voluntary standard, should raise parents' awareness of the potential hazardousness of crib toys. This increased awareness may make it more likely that the labels will be noticed, understood, and followed.

D. Economic Analysis

In a June 1991 market sketch (Tab H), the Directorate of Economic Analysis estimated the annual sales of crib toys to be in the range of 10-25 million units with a retail value of $110-750 million.

Due to the difficulty of defining the products and incidents that would be included under each ban request, a description of potential benefits and costs of a rule as required under the Federal Hazardous Substance Act (FHSA) is not possible (Tab I).

E. ANPR comments

CPSC received 17 official comments in response to the ANPR (Tab D).

Eight commentors supported a mandatory rule. Some expressed concern that the current voluntary standard is not strong enough to address the issue of string lengths. Also, concern was expressed that the current voluntary standard does not have provisions to address protrusions, labeling for mobiles, and entrapment hazards in openings formed by multiple cords in conjunction with part or all of the toy. Finally, the commentors expressed belief that a mandatory regulation would assure full compliance.

Four commentors disagreed with establishing a mandatory regulation and requested new data to support the need. They noted their belief that the current voluntary standard is working and that proposed revisions would address those areas not presently covered.

Five commentors did not give support either for or against, but requested new data and better definition of terms.

Staff response to the comments is found in Tabs E and J.

F. Voluntary Standard

CPSC staff has been actively participating in the revision of the current ASTM F963 Standard Consumer Safety Specification on Toy Safety. The Chairman of Subcommittee F15.22 on Consumer Products anticipates the revised standard will be completed in early 1994.

The ASTM crib and playpen toys working group discussed the issues raised in the ANPR and proposed changes to address most of the issues. Staff judges that most of the proposed changes will adequately address the major areas of concern presented in the ANPR, with the exception of string length.

Below are summaries of how the proposed revisions of the voluntary standard address the ban requests in the ANPR. The ban requests addressed are in parenthesis after the issue heading. Tab K contains a more detailed comparison of the requirements in the current voluntary standard, the proposed revisions and staff's response to those revisions.

1. <u>Labeling for toys strung across the crib or playpen</u> (#1)

A stronger label is being proposed. The label addresses the severity of the hazard by using the signal word "warning" and conveys the message that the hazard is not just entanglement, but also strangulation. In addition, the proposed format and placement of the label are intended to make it more conspicuous. Staff agrees with the proposed labeling.

2. String lengths (#1, #2, and #3)

No changes to the string length requirements are being proposed. The crib and playpen toys working group has rejected the staff's recommendation to change the requirement for string length from 12 inches to 7 inches. The ASTM working group does not believe that incident data show the need to reduce string lengths below 12 inches for crib toys. Most consumer complaints involving toys with strings or cords wrapping around a child's neck involve free standing toy telephones. Under the voluntary standard, toy telephones would be subject to the string length requirements because the requirement applies to all toys used by children under 18 months of age. Restricting the string/cord lengths on toy telephones to less than 7 inches means the phone cannot be used as intended by children in pretend play because the receiver will be too close to the phone base.

CPSC staff considers anthropometric data as objective criteria to evaluate the entanglement and strangulation hazards associated with strings and cords. The incidents involving toy telephones confirm that children under 18 months wrap items around their necks. Therefore, while there are limited data on entanglement or strangulation incidents involving attached crib and playpen toys, allowing strings greater than 7 inches to be in this environment is a potential hazard. Staff maintains its position for the need to reduce string lengths for crib toys to 7 inches or less.

3. Protrusions (#4)

The subcommittee has proposed specific design guidelines (Tab L) for protrusions to be included in an appendix of the standard for guidance during the development of products. The subcommittee is taking a proactive role in trying to prevent hazardous protrusions when objective testing criteria are not available.

4. Pull rings (#5)

No changes involving pull rings are being proposed. CPSC staff judges that removal of pull rings is not necessary. The strangulation hazard involving pull cords with rings could be addressed by limiting string lengths to less than 7 inches.

5. Mobiles (#6 and #7)

The proposed labeling for the product and packaging and instructional literature for mobiles are very similar to that recommended in the ban requests and staff judges that the proposed changes will reasonably address the concerns with mobiles.

6. Instructional literature for toys strung across a crib or playpen (#8)

The proposed instructional information includes revisions which staff judges will adequately convey the necessary instructions for proper use and maintenance of the toy.

III. OPTIONS

A. Continue the proceeding by publication of a notice of proposed rulemaking.

The staff has identified features of crib toys which present risks of strangulation injury to children and which are not addressed by the voluntary toy safety standard at this time. Although ASTM is considering revisions of the voluntary standard, those revisions have not been "finally approved." For this reason, the Commission may determine that a voluntary standard which adequately reduces the risks of injury under consideration is not "in existence." If the Commission concludes development of mandatory requirements is necessary to address risks of strangulation injury associated with crib toys, the Commission could publish a notice of proposed rulemaking.

B. Terminate the rulemaking proceeding by withdrawing the ANPR.

Less than two strangulation deaths to children each year are associated with crib toys. The staff has information about only one permanent injury associated with crib toys during the past 20 years. Little information is available to establish that issuance of mandatory requirements for crib toys would further reduce the numbers of deaths and injuries associated with crib toys. If the Commission determines that information is not currently available or likely to be developed to establish that crib toys present an unreasonable risk of strangulation injury to children, it could terminate this proceeding by publishing a notice to withdraw the ANPR.

C. Suspend the rulemaking proceeding until ASTM takes final action on the proposed revisions of the voluntary toy safety standard.

An ASTM subcommittee has developed revisions of the voluntary toy safety standard which the staff judges will address most of the hazards with crib toys identified in the ANPR. However, those revisions have not been finally approved by ASTM and do not adequately address the staff's concern with string lengths greater than 7 inches. If the Commission concludes that the revisions of the voluntary standard developed by the subcommittee adequately address the risks of injury under consideration, the Commission could defer further action on the rulemaking proceeding to allow ASTM to complete its process for final approval of those revisions.

IV. RECOMMENDATION

The staff recommends that a draft Federal Register notice be developed withdrawing the Advance Notice of Proposed Rulemaking for crib toys and that staff be directed to continue working with ASTM to develop satisfactory string length requirements. This recommendation is based on:

* Lack of information to show that a mandatory standard would further reduce deaths. For example, staff was unable to develop objective criteria to distinquish between hazardous and non-hazardous protrusions.

* Less than two deaths a year with one reported case of permanent injury in 20 years and estimated annual sales of crib toys in the range of 10 to 25 million units.

* Lack of evidence available or likely to be developed to show that crib toys present an unreasonable risk of injury to children.

* Anthropometric data that show strings greater than 7 inches are long enough to encircle a child's neck.

A

HUMAN FACTORS EVALUATION OF PROVISIONS WHICH ADDRESS CRIB TOY STRANGULATIONS IN THE TOY SAFETY VOLUNTARY STANDARD

JULY 1987

Shelley Waters Deppa
Engineering Psychologist

CPSA 6 (b)(1) Cleared

X No Mfrs/PrvtLblrs or Products Identified

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___ Firms Notified,

___ Comments Processed. JO

U.S. Consumer Product Safety Commission
Division of Human Factors

NOTE: This document has not been reviewed or accepted by the Commission.
Initial JO Date 11-27-87

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EXECUTIVE SUMMARY

This report is a human factors evaluation of provisions which address crib toy strangulation hazards in the toy safety voluntary standard.

Our evaluation was based on the results of analyzing crib toy strangulation and near-strangulation incidents, identifying product characteristics contributing to accidents, and relating these characteristics to human characteristics using professional/technical literature on child development, anthropometry, and types/mechanisms of strangulation.

I. INTRODUCTION

In the past, efforts to reduce the likelihood of strangulation on crib gyms were on a case-by-case basis. In the early 1970's, the Food and Drug Administration (FDA) became aware of the death of an infant who fell forward onto a crib gym elastic cord which tightened around her neck as she twisted and fell. In response to this death, a provision to limit the length of strings to less than 12 inches was included in the voluntary standard on toy safety. Then, in the early 1980's, CPSC became aware of two deaths when infants' clothing became caught on crib gym protrusions. In response to these deaths, CPSC requested that the voluntary standard include a labeling provision to remove crib gyms from the crib when infants are capable of pushing up on hands and knees.

Strangulation cases continue to occur, both in different ways and on other-toys attached to the crib. Therefore, the Children's and Recreational Products Program Team initiated a project to evaluate provisions which address strangulation hazards with crib toys in the American Society for Testing and Materials Standard Consumer Safety Specification on Toy Safety, F963-86.

Our report evaluates, from a human factors perspective, provisions which address crib toy strangulation hazards in the toy safety voluntary standard. This evaluation is based on the results of analyzing strangulation and near-strangulation incidents, identifying product characteristics contributing to accidents, and relating these characteristics to human characteristics.

II. INCIDENTS

The CPSC Division of Hazard Analysis identified strangulation-related incidents involving toys attached to cribs or playpens[1], which, for the purpose of this paper, are called "crib toys". Commission data files reviewed included the National Electronic Injury Surveillance System (NEISS), death certificates, in-depth investigations, consumer complaints, and newspaper clippings. Through NEISS, none of the injuries involving crib toys were due to strangulation. While incidents from sources other than NEISS do not constitute a statistical sample or include all incidents that occurred, they nevertheless provide insight into how children can strangle on crib toys.

A total of 49 crib toy incidents were identified, which included 30 deaths, 1 severe brain damage, and 18 near-misses, occurring from 1973 through April 1987. These included both toys intended to be attached to cribs, and other toys which consumers attached to cribs by adding cords or by hanging toys over crib corner post extensions.

A. Types of Toys

Information was available on the type of crib toy in all but 7 cases. We have classified these toys into the following types:

1. Crib Gyms (28 cases, including 14 deaths and 1 severe brain damage)

These toys are usually strung across a crib's width with the two ends attached to opposite sides. They are sometimes called "exercisers", or "kickers". Objects attached to crib gyms, such as pull cords, squeakers, rotating spokes, rattles, etc., are intended to be manipulated by the child, as well as to provide visual and sometimes auditory stimulation. Several of these were toys, such as rattles, which consumers tied onto a cord and hung across the crib.

2. Other Crib Toys (14 cases including 9 deaths)

There are four types of other crib toys:

a. Suspended Stuffed Toys (4 cases, including 3 deaths)

These toys consist of a stuffed animal suspended by two or more cords which converge at some distance above the toy. In at least three cases,

the suspension cords were looped over the corner post extension and the toy hung into the crib. They are intended for manipulative as well as auditory and visual stimulation, as they are cuddly and make noise when moved.

b. Cord-Activated Toys (4 cases including 1 death)

These toys are attached in one place to a crib side or end rail and hang into the crib. Unlike crib gyms which have several types of objects to be manipulated, these toys only contain pull cords to activate a device in the toy, such as a music box. They provide visual, manipulative, and sometimes auditory play value.

c. Mobiles (4 cases, including 3 deaths)

These toys are attached either to one part of a crib side/end rail, or to the ceiling, and are hung out of reach. In one case the mobile was homemade and hung from the ceiling within reach of the child. These toys provide visual, and sometimes auditory, stimulation.

d. Activity Boxes (2 cases, both deaths)

These toys are attached to one part of a crib by a frame which contains doors, push buttons, rotary knobs, etc. They provide manipulative, visual, and auditory play value.

B. Types of Strangulation

Strangulation is produced by pressure on the neck. According to the technical literature, there are four types of strangulation, depending on how this pressure is produced:[2] [3] Hanging occurs when pressure is exerted on the neck by an external mechanism and tightened by the weight of the victim's body. Postural Strangulation occurs when the victim's neck is suspended over an object and the weight of the body creates pressure on the neck. Ligature Strangulation occurs when pressure is exerted on the neck by an external mechanism, but the weight of the body or head plays no part. Manual Strangulation occurs when the external pressure on the neck is exerted by human hands and the weight of the victim's body or head plays no part.

In the incidents we reviewed, only hanging and postural strangulation occurred with crib toys. Information was present on the type of strangulation in all but 6 cases.

1. Hanging (35 cases including 19 deaths)

In these cases, the external mechanism which applied pressure to the neck was either a crib toy cord or a secondary product around a child's neck which caught on a crib toy protrusion.

a. Crib Toy Cord Entanglement (25 cases including 12 deaths)

In these cases, cords from nearly all types of crib toys wrapped around the child's neck. Most cases occurred in one of three ways. In the remaining eight cases, the type of entanglement was either unknown or was unique to one case. The three ways are:

(1) Detached Toys (7 cases, including 1 death)

In all but one case, one end of a crib gym was detached, either intentionally by the parent, or accidently, from the crib. The other case occurred when a mobile fell into the crib.

(2) Pull Cords (5 cases, including 1 death)

Three cases occurred on pull cords of cord-activated toys and two cases occurred on pull cords of crib gyms.

(3) Suspension Cords (5 cases, including 4 deaths)

In all but one case, an infant's head and neck became entangled in the opening created by multiple suspension cords attached to a stuffed animal. The other case occurred on a homemade mobile consisting of toys suspended by individual cords which tangled so that the effect was the same.

b. Secondary Product Entanglement (10 cases, including 7 deaths)

In these cases, usually something worn by the child, such as clothing, pacifier cord, bib, or necklace, was caught on a protrusion of the toy. While over half the cases involved crib gym protrusions, this hazard pattern also occurred on

nearly all types of crib toys - mobile attachment clamp, activity box knob, and cord-activated toy protrusion.

2. Postural Strangulation (8 cases including 6 deaths)

In most of these cases, the child's head and neck was suspended over a horizontal cord. All but one case occurred on crib gyms. The other case occurred on a cord attaching a flexible activity box to a mesh-sided playpen.

III. PRODUCT CHARACTERISTICS

To determine why certain product characteristics have contributed to strangulation accidents, we identified commonalities in crib toy characteristics, and related these characteristics to human characteristics. The results were used to evaluate, from a human factors perspective, applicable provisions of the ASTM Toy Safety standard.

Five product characteristics were most evident:

A. Play Value

1. Human Characteristics

Mobiles are the only type of crib toy not intended to be manipulated by the child; they primarily provide visual stimulation. According to the Guidelines for Relating Children's Ages to Toy Characteristics[4] ("Age Guidelines"), mobiles are most appropriate for infants in the first six months of life who cannot yet explore objects with hands, feet, and mouth, to help them focus on and follow objects with their eyes. Once infants are able to reach and grasp objects, they are less interested in toys that cannot be touched and manipulated.

All other types of crib toys are intended to be manipulated by the child as evidenced by the toys' characteristics and names. These toys often contain easy-to-grasp parts which produce sound or motion, such as pull rings which activate music boxes or rotate figures. The names "gym," "exerciser," and "kicker," imply that manipulation is intended to enhance motor ability; for example, kicking moveable parts to develop stronger leg muscles, or using easy-to-grasp parts to help pull up to a sitting or standing position. According to the Age Guidelines, infants around 3 months of age begin to reach and grasp, shake, and pull, to create simple effects.[5]

While there is not a definitive age at which children lose interest in manipulative crib toys, we would estimate 12 months of age to be the age at which this type of crib toy use declines, for two reasons. First, by twelve months of age, thumb apposition is complete and the child becomes capable of more complex fine motor skills.[6] Second, as children's gross motor skills develop, such as standing, climbing, and walking, parents may remove crib gyms, both to make

room for the child to move about the crib, and to eliminate the possibility of a child using the crib gym as a toehold to climb out of the crib. The fact that 38 of the victims in the reported crib toy incidents were from six through twelve months of age, shows that some children are using crib toys at these ages.

Therefore, while non-manipulative crib toys are intended for use by children less than 6 months of age, manipulative crib toys are most appropriate for children from 3 through 12 months of age.

2. Voluntary Standard

The toy safety voluntary standard contains a labeling provision in Section 5.4.1(1) stating that crib gyms with cords shall be labeled "From birth to 5 months". There is an inconsistency about limiting the use of manipulative toys to children less than five months of age. Since a child cannot manipulate the toy until three months of age, the toy would only be useful to the child for two months. Further, since the child development literature indicates that children from 3 through 12 months of age obtain the maximum benefit from the toy, it is questionable whether parents would follow the label and remove the toy just when a child is beginning to play with it. In the accident data, where such information was reported, three incidents occurred on toys that had statements in the instructions warning about using the toy as a crib gym when children reach 5 months of age. Two of these incidents involved victims over 5 months of age.

The voluntary standard does not contain a labeling requirement for non-manipulative toys.

B. Installation Height

1. Human Characteristics

Since mobiles are the only type of crib toy not intended to be manipulated, they are the only crib toys designed to be hung out of reach of children. In this context, "out of reach" depends on both the age of the child and on the height adjustment of the crib mattress. During the first year of life, children's gross motor skills change dramatically.[7] Before five months of age, infants are unable to lift their bodies off the mattress, except perhaps to hold the head and chest off the mattress for a few seconds while on the stomach. Around five months of age, infants begin to push on hands and draw up knees while on the stomach.

Around seven months they begin to raise to a sitting position, and to pull themselves to a standing position, using objects for support. On the other hand, mobiles should not be hung so far from children that they cannot see the toy. According to the Age Guidelines, children under 3 months of age cannot focus on objects more than 14 inches from their eyes.[8] Therefore, mobiles hung higher than this distance may not be seen by the child.

All other types of crib toys are intended to be within reach of children, as they are intended for manipulation. Installation height is important for three reasons. First, these crib toys are intended for children who are developing, but have not yet mastered, skills. For example, children are learning to push themselves up on hands and knees, but may fall over onto the horizontal cord of a crib gym. They do not have the cognitive ability, strength, or motor skills, to push themselves off the cord.

Second, a common misconception is that children cannot strangle if their body weight is supported. In fact, infants can die when their heads and necks are suspended over, or entangled in, objects, even though most of their body weight is supported by the mattress. This is because obstruction of the airway may not be a prerequisite for death. Strangulation can occur in any of the following ways:[9] [10] blockage of the airway by elevation of the base of the tongue against the pharynx, compression of the jugular veins (veins leading from the head), or occlusion of the carotid arteries (arteries leading to the head). The amount of force required for death is very small: hanging can occur from virtually any position, including positions where the feet or knees are supported by a surface and the entire body weight is not involved; and compression of the jugular veins in the neck requires as little as 2 kg (4.4 lb) of force, less than one third the weight of a 50th percentile 5 month old infant.[11]

Third, crib gym suspension height is a factor in postural strangulation due to the distribution of body masses. Specifically, horizontal suspension members at approximately the same height as fully raised crib side rails would be unlikely to strangle a child, since the distribution of body and head masses would cause the child's head/neck to spontaneously rotate off the member. Conversely, with lower horizontal members, the body weight would not assist in rotating the head/neck off the member.

Therefore, the following product characteristics could reduce the risk of strangulation:

First, since non-manipulative crib toys, such as mobiles, are intended to be installed out of reach of children, designs which cannot be inadvertently located within reach of the crib occupant could prevent strangulations. In addition, since "out of reach" changes as the child grows older, toys containing the following permanent label on both the packaging and the product may also have a lower likelihood of strangulation:

⚠ WARNING
Keep toy away from baby's reach. Remove toy when baby becomes 5 months of age or begins to push up on hands & knees.

Ideally, since mobiles would be out of reach, they could not present a strangulation hazard. However, 3 out of 4 cases with mobiles involved children 7 or 8 months of age. In one incident, an 8 month old child died when his clothing caught on a mobile attachment clamp. The mobile had both a label on the product and instructions accompanying the product stating to remove mobile from crib and mount on wall when baby is 5 months old or begins to push up on hands and knees. We believe it is foreseeable that some people will continue to leave mobiles in the crib after the child is 5 months of age, even if a label is on the product, for two reasons. First, a musical mobile is likely to be one of the child's first toys, since no manipulative skill is needed. A child may become accustomed to being soothed to sleep by the mobile's music. Then, even though the child becomes older and interested in other toys, the music may still be used to soothe him/her at bedtime. Second, in addition to play value, we think some people will view a mobile as a nursery decoration to be left in the room, even if the child appears to lose interest in it. The mobile, in a sense, fulfills the parent's desire to have a pretty room, rather than the child's need for a toy. Therefore, mobiles which are also designed to reduce

the potential for strangulation even if a child can reach the toy, would be safer.

Second, manipulative toys with horizontal suspension members that can only be installed at or above crib rail height could reduce the risk of strangulation. This is based on the fact that we are aware of only one incident of a child strangling when his/her head was suspended over a straight crib side or end rail, and the facts in this incident are unclear.

Third, both non-manipulative and manipulative toys with warnings in the instructions that crib mattresses should be placed in one of the lower positions, and that crib drop sides should be up, would reduce the likelihood of strangulation.

2. Voluntary Standard

The voluntary standard contains two provisions addressing installation height. First, Section 5.4.1(2) states that crib gyms with cords shall be labeled "CAUTION: To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees." Since infants attain the capability to manipulate the toy within two months of when they attain the capability to push up on hands and knees, it is questionable whether this provision would be effective.

The second provision addressing installation height is Section 6.3 which states that instructions for proper assembly, installation, and use, be provided with crib gyms and include the following information: a) Crib gym is not intended to be "mouthed" and should be positioned clearly out of reach of baby's mouth; b) Highest mattress position may allow gym to be too close to baby. Second or lower position is more appropriate; and c) Crib drop side should never be lowered with gym in place and baby unattended.

The voluntary standard does not contain a requirement that crib toys have horizontal suspension members that can only be installed at or above crib rail height. In addition, the voluntary standard does not specify that instructions should separate all safety messages from extraneous information, such as child development information, miscellaneous games, and advertisements for other products, and present these safety messages first. One mother who received a lengthy booklet glanced at its cover, put it away to be read "at a later date", and then forgot about it. It was only

after her child strangled on the crib toy that the mother remembered receiving the booklet.

The voluntary standard does not contain any requirement for addressing the installation height of non-manipulative crib toys.

C. Cords

1. Human Characteristics

In all cases, except hanging by a secondary product caught on a crib toy protrusion, cords were present on crib toys and contributed to accidents. In this context, we are using the term "cord" to mean a slender flexible material such as string, elastic, yarn, plastic strap, ribbon, monofilament, etc. Cords are used for attaching toys to cribs, for activating parts of toys, as in pull cords, and for suspending toys. Three properties of cords affect strangulation hazards - flexibility, length, and orientation. In addition, multiple cords can also contribute to strangulation.

Flexibility is a factor in two ways. A cord can tangle and form a loop, such as around the child's neck. In addition, if the cord is loosely attached to the crib by its two ends, it can droop into the crib. We believe that children will have more difficulty in freeing themselves from a drooping cord than from a rigid bar. A drooping cord molds to the shape of a child's small neck and prevents a child's large head from rotating off it, much as the crib headboard cutout and accordion gate v top edge allowed children's necks to enter but prevented children's heads from spontaneously exiting.

Length of cords is also an important factor in two ways. First, strings longer than a child's neck circumference can encircle the neck. The 50th percentile neck circumference of infants between the ages of 4 and 6 months is 8.3 inches.[12] In fact, one entanglement incident occurred on an 8 inch pull cord and an entanglement death occurred on a 9 - 10 inch pull cord. Second, it is not necessary for a cord to extend around the entire circumference of the neck for strangulation to occur, particularly in postural strangulations. External marks on victims indicate that cords which exert force only on anterior portions of the neck can cause death, thus a length about half of the neck circumference may be involved. In three of the postural strangulation cases, the marks on the neck were 2.4, 3.5, and 4.3 inches long. The shortest cord

involved in postural strangulation was approximately 2-1/2 inches long.

Orientation of cords is also a factor in strangulation accidents. A difference exists in type of strangulation between vertical and horizontal crib toy cords. While vertical crib toy cords were involved in the various types of hanging/entanglement incidents, horizontal cords were involved in the postural strangulation cases and tended to be shorter.

In addition, the presence of multiple cords can also contribute to strangulation hazards. In 5 cases, resulting in 4 deaths, an infant's head and neck became entangled in the opening created by multiple suspension cords attached to toy(s).

Therefore, the following product characteristics would reduce the likelihood of strangulation:

First, since horizontal cords of almost any length can cause strangulation, horizontal suspension members that are rigid would lower the risk of strangulation. The potential for postural strangulation on rigid horizontal bars would equal the potential for strangulation on crib side rails. We are aware of only one incident of strangulation when a child suspended his/her head and neck across a straight crib side or end rail, and the facts in this incident are unclear.

Second, since vertical cords long enough to encircle a child's neck can cause strangulation, vertical cords that are less than 6 inches in length would reduce the likelihood of strangulation. This is based on the circumference of a child's neck, approximately 8 inches, minus 25 percent of the neck circumference to allow for tissue compression. This approach of allowing for tissue compression was used in developing the crib headboard cutout test fixture and the accordion gate/enclosure opening test fixture.

Third, perimeters of crib toy openings, formed either by multiple cords, or by cords combined with other portions of the toy to which the cords are attached, that are less than 14 inches in their most extended state, would also lower the risk of strangulation. Since an opening has to be large enough to fit over the head before it can encircle a child's neck, this dimension is smaller than the perimeter of a child's head both in the top-of-head first entry (back of head-ear-face-ear perimeter) and in the face first entry (top of head-ear-chin-ear perimeter). According to

anthropometry data, the 5th percentile a) head circumference for a 0 - 3 month old is 14.6 inches, and b) Ear-to-Ear Over Top of Head Arc Length (9.3 inches) plus Ear-to-Ear Under Chin Arc Length (5.6 inches) is 14.9 inches.[13] Therefore, a perimeter of less than 14 inches will prevent entry of a child's head in the opening.

2. Voluntary Standard

The voluntary standard has two requirements addressing cord length. First, the voluntary standard contains a safety requirement in Section 4.13.1 that limits the length of cords on crib toys to less than 12 inches. Horizontal cord-postural strangulation cases can occur on cords of almost any length. Vertical cord-hanging/entanglement cases can occur on cords longer than the circumference of a child's neck. Therefore, a 12 inch limit does not preclude either of these potential hazards.

Second, the voluntary standard has a safety requirement in Section 4.13.1 that if a cord can tangle to form a loop, the perimeter of the loop shall be less than 14 inches. While this provision is adequate to prevent loops from fitting over the head, it does not address openings formed by multiple cords or by cords in combination with other portions of the toy to which cords are attached.

D. Pull Rings

1. Human Characteristics

The presence of rings on pull cords can contribute to strangulation accidents. In one case, a child died when his arm caught in the ring. As he rolled over, the string encircled his neck. A pull ring can enable a child to strangle on a pull cord shorter than the neck circumference because the net effect of a child's hand or arm caught in a ring is to pull the cord to the horizontal orientation. A solid handle attached to the pull cord, rather than a ring, might have prevented this accident.

2. Voluntary Standard

The voluntary standard has a requirement in Section 4.13.3 stating that self-retracting pull cords on toys for children under 18 months of age shall not retract when a weight of 1 or 2 lb is attached, depending on

the type of cord. This provision does not address the presence of pull rings.

E. Protrusions

1. Human Characteristics

Protrusions were present in all cases of hanging by a secondary product caught on a crib toy. In at least three deaths, the protrusions were very small - a mobile attachment clamp, a cord-activated toy protrusion, and an activity box knob.

As with installation height, the problem with protrusions occurs because the users of crib toys are developing, but have not yet mastered skills such as kneeling, sitting, and standing. They often struggle to attain these positions, only to fall over uncontrollably, hooking anything in their way. In addition, once caught, these children are unable to free themselves, lacking both cognitive ability as well as fine motor skills.

Therefore, crib toys without hazardous protrusions would have a lower likelihood of strangulation. However, we recognize the difficulty in identifying these protrusions, as past attempts to develop a performance requirement to identify hazardous protrusions, such as the crib corner post extensions which can catch children's clothing, have been unsuccessful.

2. Voluntary Standard

There are no provisions in the toy safety voluntary standard addressing the potential for a protrusion on a crib toy to become a catch point for clothing or for a cord around a child's neck.

IV. CONCLUSIONS

Almost any type of crib toy can present some type of strangulation hazard. While it is difficult to entirely eliminate all strangulation hazards from crib toys, we have determined that those toys having the following characteristics would be less likely to result in strangulation than the crib toys involved in the incidents we reviewed:

1. Non-manipulative crib toys, such as mobiles, which cannot be inadvertently located within reach of the crib occupant.

2. Non-manipulative crib toys, which attach to a crib, that contain a permanent label on both packaging and product stating:

> ⚠ WARNING
>
> Keep toy away from baby's reach.
>
> Remove toy when baby becomes 5 months of age or begins to push up on hands & knees.

3. Manipulative crib toys with horizontal suspension members that are rigid and can only be installed at or above the height of crib side rails.

4. Crib toy vertical strings that are less than 6 inches.

5. The perimeter of crib toy openings, formed either by multiple cords or by cords in combination with other portions of the toy to which cords are attached, that are less than 14 inches in their maximum extended state.

6. Crib toys without protrusions which can catch or hold a cord or part of clothing.

7. Crib toys with instructions which include warnings that crib mattresses should be placed in one of the lower positions, and that crib drop sides should be up. In addition, instructions which separate safety messages from informational messages, and present the safety messages first.

The voluntary standard, on the other hand, contains provisions which human factors principles cannot support. Specifically, the standard relies on a label advising parents to remove the toy when, according to child development literature, the toy would be

of most use to the child. In addition, the standard contains a cord length requirement which has no relationship either to anthropometry or to mechanisms of strangulation.

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UNITED STATES GOVERNMENT

Memorandum

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

DATE: JUN 22 1987

TO : Elaine Tyrrell, OPMB
Through: Dr. Robert D. Verhalen, AED, Epidemiology

FROM : Debbie Tinsworth, EPHA DKT

SUBJECT: Strangulation-Related Incidents Involving Crib Toys

This memorandum provides data on crib toy-related strangulations or near-strangulations which were reported to CPSC from 1973 through April 1987. It is an update of information provided in our July 2, 1986 memorandum on this subject.

The incidents included in this review are those in which a strangulation-related death, injury, or "near-miss" was reported with a crib gym, mobile, exerciser, activity center, or similar toy which was intended to be strung across a crib or playpen, attached to a cornerpost or siderail, or suspended above an infant. This includes incidents for which the toy was directly involved in the strangulation or near-strangulation, as well as incidents for which the toy was involved as a second product; e.g., strangulations resulting from clothing or other items becoming caught on crib toys.

Commission data files reviewed included the National Electronic Injury Surveillance System (NEISS), death certificates, in-depth investigations, consumer complaints, and newspaper clippings. Through NEISS, about one or two injuries involving crib gyms or mobiles are reported each year; however, none of these have involved strangulations. While incidents from sources other than NEISS do not constitute a statistical sample or include all incidents that occurred, they nevertheless indicate some of the ways in which strangulations may occur to young children.

Excluding homemade products, CPSC has received reports of 45 incidents involving crib toy-related strangulations or near strangulations. These include 26 deaths, 18 "near-miss" incidents in which no permanent injury occurred, and one case reported as involving severe brain damage. A listing of incidents, by the type of toy involved, is provided as an Appendix to this memorandum.

Hazard Patterns

The attached table presents the hazard patterns reported for the various types of crib toys by the severity of the incident.

Toys intended to be suspended across a crib or playpen, such as crib gyms or exercisers, were reported to have been involved in 26 of the 45 incidents, resulting in 12 deaths, one case of brain damage, and 13 near-misses. In six cases, products such as clothing, pacifier cords, or a blanket were said to have become entangled in the toy and strangled the infant. Six incidents were reported to have occurred when the toy became detached from the side of the crib or playpen either accidentally or intentionally (so the child could reach the toy more easily), thus allowing the detached cord to become wrapped around the victim's neck. In five cases, the child was said to have been found with his or her neck suspended across the crib toy, possibly when the child fell from a standing or kneeling position and was unable to pull or push off the toy. Two incidents were said to involve infants becoming entangled in pull cords hanging down from the toy. One incident involved a child who became entangled in the coiled springs of a trapeze-type crib exerciser. In six cases, the specific way in which strangulation occurred was not reported.

Toys intended to be attached to the side or end of a crib or playpen were reported to have been involved in six incidents, which included three deaths and three near-misses. Three of these toys, which included musical and animated devices, were reported to have pull cords which became entangled about the child's neck. In two cases, one involving a musical toy and the other an activity center, the child's clothing became caught on a projection on the toy, resulting in strangulation. In one case, which involved an activity center, the child was found with his head between the back of the toy and the side of a mesh playpen, his neck across a looped cord used to attach the toy to the playpen.

Four incidents, including three deaths, involved toys which appear to have been hung from a crib cornerpost. (In one nonfatal incident, it was not specifically reported whether the toy was hung from the crib cornerpost, but it was of the same design as others in this category). In these cases, it was reported that the cords used to suspend the toy became entangled around the child's neck.

Mobiles were reported to have been involved in three incidents, resulting in two deaths and one near-miss. In one case, the child's clothing became caught on the clamp of the toy which was used to attach it to the crib. In another case, the mobile was said to have fallen from its stand into the crib, and one of the toy's strings became entangled about the child's neck. In the third case, the circumstances that led to the child's strangulation were not reported.

Six fatal incidents involved toys of unknown type which were attached to cribs. In one instance, a child was said to have strangled when his necklace became entangled in an overhead crib toy. In five cases, the circumstances were unknown.

Victim Age

The victims were reported to have ranged in age from one month to two years, however, 34, or three-fourths of the 45 victims were from six to twelve months of age. Because of the small number of cases involved, it is not possible to draw firm conclusions about the ages of the victims in terms of each toy type and hazard pattern involved. In terms of developmental information, however, it was commonly reported that the victims were able to push up, pull up, or stand in their cribs at the time the accident occurred.

Other Information

Where reported, these incidents involved toys produced by 15 different manufacturers. In addition, four fatal incidents were reported with homemade toys which were not included in the table. They involved two homemade toys suspended across a crib, one mobile, and a rattle tied onto a crib.

Cautionary statements were said to be present in four of the cases where such information was reported. Three of the incidents, two of them fatal, involved toys suspended across a crib. These toys, all produced by the same manufacturer, each had cautionary statements included in the toy's instruction booklet, but not affixed to the toy itself. In the fourth case, a fatal incident involved a mobile where it was reported that the cautionary statement printed on the toy was not easily visible, in that the statement was facing the wall of the victim's room.

In several cases, it was reported that the parents were unaware of potential strangulation hazards that exist with crib toys.

Discussion

Based on available data, it appears that infants in the 6 to 12 month age group may be at greatest risk of strangulation with crib toys. At this state of development, children are becoming increasingly mobile and are learning to push up, pull up, stand, and even walk. However, if they become caught on a toy or entangled in the cords or strings of a toy, they may lack the coordination or strength to extricate themselves from a potentially hazardous situation.

One response to this problem was the Voluntary Standard for Toy Safety (PS 72-76, published in 1976) which limited the length of cords on toys intended for use in cribs and playpens. The more recently developed voluntary standard, ASTM F963-86, published April 1986, requires cautionary labeling on both the toy and packaging of crib gyms, kickers, and exercisers in addition to limiting the toy cord length. The labeling addresses entanglement hazards by recommending that such toys only be used until the child is 5 months old or is able to push up on hands and knees. Based on the available data, however, it appears that some modification of these provisions may be needed, possibly in the areas of labeling, string length, and other design requirements. A Human Factors analysis of these data explores these issues in detail.

These incidents also highlight the importance of parental awareness of these hazards. A better understanding of the possible consequences of using these toys may help parents or other caretakers to avoid situations where death or serious injury could occur.

Toy Type and Hazard Pattern, by Severity of Incident

Toy Type and Hazard Pattern	SEVERITY OF INCIDENT		
	Total	Death	Near-Miss
Total	45	26	18
Toys Intended to Be Suspended Across Crib or Playpen	26	12	14[1]/
Clothing, pacifier or blanket entangled in toy	6	3	3
Toy detached from side, becoming wrapped around neck	6	1	5
Child's neck suspended across top of toy	5	3	2
Entangled in pull cord hanging from toy	2	1	1
Entangled in trapeze hanging from toy	1	1	-
Strangulation/near-miss, manner unknown	6	3	3[1]/
Toys Attached to Side of Crib or Playpen	6	3	3
Entangled in pull cords	3	-	3
Clothing caught on toy	2	2	-
Child's neck suspended across attachment cord	1	1	-
Toys Hung from Crib Cornerpost	4	3	1
Entanglement in toy's suspension cords	4	3	1
Mobiles	3	2	1
Entangled in cords when toy fell in crib	1	-	1
Clothing caught on toy	1	1	-
Strangulation, manner unknown	1	1	-
Toys Attached to Cribs, Types Unknown	6	6	-
Necklace entangled in overhead crib toy	1	1	-
Strangulation, manner unknown	5	5	-

1/ Includes one brain damage incident

Source: CPSC Death Certificates, In-Depth Investigations, Consumer Complaints, and Newspaper Clippings, 1973 - April 1987
U.S. Consumer Product Safety Commission/EPHA

Appendix
Strangulation or Near-Strangulation Incidents Involving Crib Toys, by Type of Toy

	Date of Incident	Age & Sex of Victim	Severity of Incident	State
Toys Intended to Be Suspended Across Crib or Playpen				
	1/12/87	2 yr. F	Near-Miss	CT
	12/30/85	7mo. F	Death	CA
	3/15/85	8mo. M	Near-Miss	FL
	10/13/84	10mo. M	Death	MD
	8/8/84	6mo. M	Near-Miss	OK
	3/10/84	12mo. F	Death	ND
	2/-/84	3mo. M	Near-Miss	NJ
	12/-/83	6mo. F	Near-Miss	MA
	9/26/83	10mo. F	Near-Miss	IN
	7/-/82	7mo. M	Near-Miss	NY
	3/11/81	16mo. F	Death	NJ
	12/28/80	12mo. M	Near-Miss	SC
	8/26/80	6mo. M	Death	CA
	4/27/80	7mo. F	Death	AZ
	4/10/80	5mo. M	Death	MN
	12/-/79	9mo. M	Near-Miss	FL
	4/11/79	8mo. M	Death	PA
	8/11/78	10mo. M	Death	PA
	7/11/78	10mo. F	Death	VA
	-/-/78	8mo. M	Near-Miss	AZ
	7/29/77	11mo. F	Brain Damage	MA
	7/4/77	9mo. F	Near-Miss	IN
	1/27/77	10mo. F	Near-Miss	CA
	9/6/76	10mo. M	Death	TX
	2/18/75	7mo. M	Near-Miss	IN
	11/1/73	6mo. M	Death	KS
Toys Attached to Side of Crib or Playpen	9/23/86	14mo. M	Death	MN
	4/25/86	12mo. M	Death	MN
	3/9/86	13mo. F	Death	AK

	Date of Incident	Age & Sex of Victim	Severity of Incident	State
	1/15/86	10mo. M	Near-Miss	CA
	3/25/80	9mo. F	Near-Miss	MA
	1/-/76	3mo. -	Near-Miss	TX
Toys Hung From Crib Corner Post				
	9/17/86	15mo. M	Death	PA
	4/-/80	14mo. M	Near-Miss	VA
	11/22/79	8mo. M	Death	NV
	10/3/79	11mo. F	Death	CA
Mobile	11/23/86	3mo. M	Death	MI
	6/25/79	8mo. M	Near-Miss	TX
	12/13/78	1mo. M	Death	IL
Toys Attached To Crib, Type Unknown				
	9/8/82	7mo. M	Death	NY
	4/28/79	11mo. M	Death	WI
	4/24/79	6mo. M	Death	FL
	8/19/76	9mo. M	Death	NY
	12/12/75	12mo. M	Death	TX
	1/14/74	21mo. F	Death	NH

Source: CPSC Death Certificates, In-Depth Investigations, Consumer Complaints, and Newspaper Clippings, 1973-April 1987

U.S. CONSUMER PRODUCT SAFETY COMMISSION/EP

C

Aviation Administraiton, Office of Public Affairs, Attention: Public Inquiry Center, APA-230, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267-3484. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRM's should also request a copy of Advisory Circular No. 11-2A which describes the applicaiton procedure.

The Proposal

The FAA is considering an amendment to part 71 of the Federal Aviation Regulations (14 CFR part 71) to alter the descriptions of VOR Federal Airways V-6, V-123, V-157, V-433, and V-445 located in the States of New York, Pennsylvania, and New Jersey. The airway changes are the result of the relocation of the LaGuardia, NY, VOR, and the associated ATC procedural changes as a result of the relocation. Section 71.123 of part 71 of the Federal Aviation Regulations was republished in Handbook 7400.6F dated January 2, 1990.

The FAA has determined that this proposed regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore—(1) Is not a "major rule" under Executive order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this rule, when promulgated, will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 71

Aviation safety, VOR federal airways.

The Proposed Amendment

Accordingly, pursuant to the authority delegated to me, the Federal Aviation Administration proposes to amend part 71 of the Federal Aviation Regulations (14 CFR part 71) as follows:

PART 71—DESIGNATION OF FEDERAL AIRWAYS, AREA LOW ROUTES, CONTROLLED AIRSPACE, AND REPORTING POINTS

1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. 1348(a), 1354(a), 1510; Executive Order 10854; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983); 14 CFR 11.69.

§ 71.123 [Amended]

2. § 71.123 is amended as follows:

V-6 [Amended]

By removing the words "INT Solberg 105° and Canarsie, NY, 245° radials; INT Canarsie 245° and LaGuardia, NY, 209° radials;" and substituting the words "INT Solberg 107°T(117°M) and Yardley, PA, 068°T(078°M) radials; INT Yardley 068°T(078°M) and LaGuardia, NY, 213°(225°M) radials;"

V-123 [Amended]

By removing the words "LaGuardia, NY, 209°" and substituting the words "LaGuardia, NY, 213°T(225°M)".

V-157 [Amended]

By removing the words "LaGuardia, NY, 209°" and substituting the words "LaGuardia, NY, 213°T(225°M)".

V-433 [Amended]

By removing the words "LaGuardia, NY, 209°" and substituting the words "LaGuardia, NY, 213°T(225°M)".

V-445 [Amended]

By removing the words "INT Yardley 065° and LaGuardia, NY, 209° radials;" and substituting the words "INT Yardley 068°T(078°M) and LaGuardia, NY, 213°T(225°M) radials;"

Issued in Washington, DC, on September 27, 1990.

Harold W. Becker,

Manager, Airspace-Rules and Aeronautical Information Division.

[FR Doc. 90-24800 Filed 10-18-90; 8:45 am]

BILLING CODE 4910-13-M

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Ch. II

Strangulation Hazards Associated With Crib Toys; Advance Notice of Proposed Rulemaking

AGENCY: Consumer Product Safety Commission.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Consumer Product Safety Commission is beginning a rulemaking proceeding which may result in the issuance of labeling and other requirements for crib toys to address risks of strangulation to children associated with those products.[1] As used in this notice, the term "strangulation" means asphyxiation due to occlusion of respiration and/or circulation by external compression of the neck.

Crib toys are toys which are intended to be attached to or near a crib or playpen for use by children younger than two years of age. Since 1973, the Commission has received reports of 51 strangulation or near-strangulation incidents associated with crib toys. These reports include 31 deaths and one permanent injury involving severe brain damage. The other 19 incidents did not result in permanent injury. Victims in these incidents ranged in age from one month to two years old. However, a majority of the victims were from six to twelve months old.

This notice describes some types of crib toys and some risks of strangulation to children associated with those particular crib toys. The Commission solicits written comments from all interested persons concerning all risks of strangulation associated with crib toys, including any risk of strangulation associated with any crib toy which is not described in this notice. The Commission also solicits comments on the regulatory alternatives discussed in this notice, and other possible means to address risks of strangulation associated with crib toys. The Commission also invites all interested persons to submit an existing standard or a statement of intent to modify or develop a voluntary standard to address risks of strangulation to children associated with crib toys.

DATES: Written comments and submissions in response to this notice must be received by December 18, 1990.

ADDRESSES: Comments should be mailed, preferably in five (5) copies, to the Office of the Secretary, Consumer Product Safety Commission, Washington, DC 20207, or delivered to the Office of the Secretary, room 528, 5401 Westbard Avenue, Bethesda, Maryland; telephone (301) 492-6800.

FOR FURTHER INFORMATION CONTACT: Elaine A. Tyrrell, Project Manager, Office of Program Management and Budget, Consumer Product Safety Commission, Washington, DC 20207; telephone (301) 492-6554.

SUPPLEMENTARY INFORMATION:

A. Background

Crib toys are articles which are intended to be attached to or near a crib or playpen for use by children younger than two years of age. (A description of several types of crib toys appears below

[1] The Commission decided to begin this proceeding by a 2-1 vote, with Commissioner Carol C. Dawson dissenting. Copies of the Commissioners' separate statements are available upon request from the Office of the Secretary, Consumer Product Safety Commission, Washington, DC 20207; telephone (301) 492-6800.

under the heading "C. The Products and Risks of Injury.")

On November 17, 1988, the Consumer Federation of America and the New York State Attorney General's Office peititioned the Commission to issue a rule under provisions of the Federal Hazardous Substances Act (FHSA) (15 U.S.C. 1261 *et seq.*) banning various crib toys described in the petition. (2) [2] The petition alleged that these crib toys present risks of strangulation to infants.

The petition requested the Commission to issue a rule which would:

- Ban any manipulative crib toy with a horizontal suspension member, unless (a) the horizontal member is rigid and can be attached at or above the height of the crib side rails; (b) the horizontal member does not have any vertical protrusion; and (c) the toy is labeled with the following statement:

Warning

Always use both ends attached to opposite crib sides.

Child could strangle on unconnected end.

- Ban any crib toy with vertical strings six inches or longer.
- Ban any crib toy with cords or other components which form a perimeter greater than 14 inches.
- Ban any crib toy with any protrusion which can catch an infant's clothing or other item worn by an infant.
- Ban any crib toy with a pull ring attached to a cord.
- Ban any crib mobile that can be located within reach of an infant not capable of pushing up on hands or knees when inside the crib.
- Ban any mobile that can be attached to a crib unless the following statement appears clearly and conspicuously on the product, its packaging, and as the first item in any instructions accompanying the product:

Warning

Keep toy away from baby's reach.

Remove mobile and attachment clamp (and music box attachment, if applicable) when baby becomes 5 months of age or begins to push up on hands or knees.

Child could strangle if clothing, head, or neck gets caught on toy part.

- Ban any crib toy which fails to include a conspicuous warning as the first item in any instructions accompanying the product to advise that when the toy is used in the crib, the crib sides should be raised and the crib mattress should be in one of the lower positions, or a strangulation hazard may result.

In support of its request for rulemaking, the petition cited two documents prepared by the Commission staff. One is a report prepared in 1987 by the Division of Human Factors, Directorate for Epidemiology, which analyzes strangulation incidents associated with crib toys, and discusses provisions of a voluntary standard applicable to crib toys (3). The second is a memorandum dated June 22, 1987, from the Division of Hazard Analysis, Directorate for Epidemiology, providing information about the numbers of strangulation incidents associated with crib toys from 1973 through April 1987 (4).

The documents cited by the petition describe and analyze reports of 49 strangulation or near-strangulation incidents associated with crib toys received by the Commission from 1973 through April of 1987. Since the preparation of these documents in 1987, the Commission has received two additional reports of strangulation incidents associated with crib toys (13, 22). One of these incidents resulted in the death of a one-year-old child who was found in a crib with his bib caught on some portion of a crib mobile attached to a crib railing (22). The other involved a seven-month-old child who was found in a playpen with the cord of a toy telephone receiver, which was part of an activity box, wrapped around his neck. This incident did not result in death or permanent injury (13).

The injury information cited by the petition in support of its request for rulemaking included reports of 30 deaths, four of which were associated with home-made toys (4). One case associated with a crib toy resulted in permanent injury involving severe brain damage. The other 18 incidents described in the documents cited by the petition did not result in any permanent injury. The victims ranged in age from one month to two years. However, most of the victims were six to twelve months old (4).

Twelve deaths and 13 other incidents resulted when cords from a crib toy became entangled around a child's neck. Seven deaths and three other incidents resulted when an article of clothing or other item worn by the child (such as a pacifier cord, bib, or necklace) caught on a protrusion on the crib toy. Six deaths and two other incidents occurred when the child's head and neck were suspended over a horizontal cord, and the weight of the child's body created pressure on the neck. In six incidents, the mode of strangulation was not known (3).

The Commission staff prepared a briefing package for consideration by the Commission when deciding whether to grant or deny the petition (1–12). The briefing package discussed the provisions of the rule requested by the petition (1, 5), information about strangulation incidents associated with crib toys (1, 3, 4, 5), and conclusions contained in the 1987 report prepared by the Commission's Division of Human Factors (1, 3, 5, 6). The briefing package also contained information about provisions of a voluntary standard which are applicable to crib toys (1, 3, 7, 10, 11, 12).

On June 13, and July 26, 1990, the staff presented oral briefings to the Commission on the petition.

After consideration of the petition and information provided by the petitioners in support of their request for rulemaking, the briefing materials prepared by the staff, information presented by the staff during the oral briefings, and other information (13–22), the Commission decided on August 16, 1990, to grant the petition.

Accordingly, the Commission is beginning a rulemaking proceeding which may result in the issuance of requirements to address strangulation hazards associated with crib toys. The regulation which may be issued as a result of this proceeding could include any or all of the provisions requested by the petition, or other requirements for crib toys.

B. Statutory Authority

This proceeding is conducted under provisions of the Federal Hazardous Substances Act (FHSA) (15 U.S.C. 1261 *et seq.*). Section 2(f)1(D) of the FHSA (15 U.S.C. 1261(f)1(D)) defines the term "hazardous substance" to include "[a]ny toy or other article intended for use by children" which the Commission determines by regulation to present "an electrical, mechanical, or thermal hazard." Section 2(s) of the FHSA provides that an article may be determined to present a "mechanical hazard" if in normal use or reasonably foreseeable use or abuse it presents an unreasonable risk of personal injury or illness "from points or other protrusions, surfaces, edges, openings or closures" or "because of any other aspect of the article's design or manufacture."

The Commission shall make its determination that a toy or children's article presents a mechanical hazard by issuance of a regulation in accordance with the procedures prescribed by 5 U.S.C. 553, unless the Commission elects

[2] Numbers in parentheses identify reference documents listed in the Bibliography at the end of this notice. Requests for inspection of any of these documents should be made at the Commission's Public Reading Room, 5401 Westbard Avenue, room 528, Bethesda, Maryland, or by calling the Office of the Secretary at (301) 492–6800.

to use the procedures prescribed in section 701(e) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. 371(e)). In this proceeding, the Commission will use procedures in 5 U.S.C. 553. The proceeding is also governed by the provisions of sections 3 (e) through (i) of the FHSA (15 U.S.C. 1262 (e) through (i)). The proceeding is commenced by publication of an advance notice of proposed rulemaking (ANPR) in accordance with provisions of section 3(f) of the FHSA. If, after considering comments received in response to the ANPR, the Commission decides to continue the proceeding, section 3(h) of the FHSA requires publication of the text of the proposed rule and a preliminary regulatory analysis of the proposal including a description of potential benefits and potential costs of the proposal. If the Commission issues a final rule, it must publish a third notice which sets forth the text of the final rule, a summary of significant issues raised by comments on the proposal, a final regulatory analysis including a description of potential benefits and potential costs, as well as specified findings about voluntary standards and the relationship of the costs and the benefits of the rule.

C. The Products and Risks of Injury

This proceeding is concerned with "crib toys," a term used in this notice to describe a variety of toys which are intended to be attached to or near cribs or playpens and to be used by infants younger than two years of age. The term "crib toy" includes, but is not limited to, all of the articles described below:

- *Crib gyms.* These toys usually are strung across the width of a crib, and may have attached objects such as pull cords, squeakers, rotary spokes, or rattles. The attached objects are intended to be manipulated by the infant, and may provide visual or auditory stimulation.
- *Crib mobiles.* Crib mobiles typically consist of one or more rigid members suspended above the crib to which decorative objects are attached. Crib mobiles may be designed to be attached to the crib, to another article of furniture, or to a wall or ceiling. Crib mobiles are intended to be installed beyond the reach of the infant in the crib, and are not intended to be manipulated by the infant. These toys are intended to provide visual stimulation to the infant.
- *Suspended stuffed toys.* These are stuffed toys, usually in the shape of an animal, suspended by two or more cords which converge at some distance above the toy. These toys are intended to be suspended from or over the crib so that they can be manipulated by the infant in the crib.
- *Cord-activated toys.* These toys are attached in one place to a crib side or end rail and hang into the crib. These toys contain cords which can be pulled by the infant to activate a device in the toy, such as a music box. Unlike crib gyms, which usually have several types of objects to be manipulated by the infant, cord-activated toys usually have only pull-cords.
- *Activity toys.* These toys are attached to one part of a crib and contain such items as doors, push buttons, rotary knobs, and other movable objects. These toys are intended to be manipulated by the infant and to provide visual and auditory stimulation.
- *Crib music boxes.* Crib music boxes are intended to be attached to a crib. They contain a wind-up mechanism which is activated by an adult outside the crib.
- *Crib mirrors.* Crib mirrors are intended to be attached to a crib or playpen.

The risks of injury associated with crib toys under consideration in this proceeding are risks of strangulation: That is, asphyxiation due to occlusion of respiration and/or circulation by external compression of the neck. The Commission has received reports of strangulation incidents associated with crib toys which occurred when a child's neck became entangled in cords that were part of a crib toy, when an item of clothing or other article worn by a child became entangled on a protrusion on a crib toy, or when a child's head and neck were suspended over a horizontal cord which was part of a crib toy (3).

D. Voluntary Standard

The Commission is aware of only one voluntary standard applicable to crib toys and risks of strangulation associated with those products. That standard is published by the American Society for Testing and Materials (ASTM) and is designated F 963–86, Standard Consumer Safety Specification on Toy Safety. This voluntary standard has provisions intended to address a variety of hazards presented by a wide range of toys.

The provisions of this standard that apply to crib toys limit the length of any string or cord which is part of a crib toy to a maximum of twelve inches. If the crib toy has string which can tangle to form a loop, the perimeter of the loop must be less than 14 inches.

The voluntary standard provides that toys which are intended to be strung across a crib, such as crib gyms, must be labeled with the following statements:

From birth to 5 months—
Caution: To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees.

This labeling provision does not apply to crib mobiles or other types of crib toys.

The voluntary standard also requires crib gyms, crib exercisers, and similar toys to be accompanied by instructions for proper assembly to assure that the product does not present an entanglement hazard. The standard provides that those instructions should include directions to position the toy out of range of the infant's face and mouth because the toy is not intended to be "mouthed"; a statement to the effect that if the crib has an adjustable mattress level, the highest level may allow the toy to be too close to the infant and the second or lower position is more appropriate; and a warning not to leave the infant unattended with the crib gym in place and the drop side of the crib lowered (7).

The Commission believes preliminarily that the provisions of the voluntary standard which are applicable to crib toys do not eliminate or adequately address risks of strangulation deaths and injuries associated with crib toys, for the following reasons:

- Provisions of the voluntary standard limit the length of cords attached to crib toys to 12 inches (7). This limitation is not supported by current anthropometric data or by available information concerning the mechanisms involved in strangulation accidents. The 50th percentile neck circumference of infants between the ages of four and six months is 8.3 inches (3). The Commission has received one report of a death associated with a crib toy in which an infant's neck became entangled in a pull-cord nine to ten inches long (3). The Commission also has reports of six deaths and two other incidents associated with crib toys in which the infant's head and neck became suspended over a horizontal cord attached to the toy. The shortest cord involved in these incidents was 2.5 inches long (3).
- The voluntary standard provides that crib gyms and other crib toys which are "intended to be strung across the width of a crib by means of strings, cords, elastic, or straps" shall be labeled with the statements:

From birth to five months—
Caution: To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees. (7)

Crib gyms and similar toys are intended to be manipulated by infants. Infants acquire the ability to reach and grasp, shake, and pull objects at about the age of three months (3). Literature concerning child-development indicates that infants obtain the maximum value from crib gyms and similar toys when they are from three to twelve months old (3). For these reasons, the Commission has reason to believe that many parents may not follow a label recommending that the remove a crib gym or similar crib toy when an infant is five months old.

• The voluntary standard provides that if string can tangle to form a loop, the perimeter of the loop shall be less than 14 inches (7). While this provision is adequate to prevent entrapment of an infant's head in a loop, this provision does not adequately address entrapment hazards which may result from openings formed by multiple cords or by cords in combination with other parts of a crib toy, particularly on suspended stuffed toys. The Commission has reports of three deaths and one other incident in which an infant's head became entrapped in the opening formed by multiple cords of a crib toy, or by cords and a part of the crib toy (3).

• The voluntary standard contains no provision to address strangulations which have resulted when an item of clothing or other article worn by the infant became entangled on a protrusion on a crib toy (7). The Commission has reports of seven strangulation deaths (not including the 1990 fatality involving a crib mobile) and three other incidents associated with entanglement of clothing or other articles worn by infants on protrusions on crib toys (3).

From 1987 through February of 1990, the Commission's Directorate for Compliance and Administrative Litigation has identified 14 different crib toys which the Commission's staff preliminarily determined to present a substantial risk of injury to children because of a strangulation hazard. In ten instances, the projects were recalled. In the other cases, the manufacturer ceased production, stopped distribution, or corrected future production of the toy. In almost all of these cases, the product did not conform to one or more provisions applicable to crib toys in the voluntary standard (12). From this information, the Commission has reason to believe that widespread nonconformance with the voluntary standard may exist.

E. Regulatory Alternatives Under Consideration

In the proceeding initiated by publication of this ANPR, the Commission is considering the possibility of issuing a rule consisting of labeling or other requirements to address strangulation hazards associated with crib toys. Such a rule could include any or all of the requirements requested by the petition, or other requirements.

In addition to the regulatory alternatives described above, the Commission also is considering the possibility that the voluntary standard for toys, ASTM F 963–86, could be revised to reduce even further the risks of strangulation associated with crib toys. The Commission also is considering the possibility that a new voluntary standard might be developed to address the risks of strangulation associated with crib toys.

F. Solicitation of Information and Comments

This advance notice of proposed rulemaking is the first step of a proceeding which could result in the issuance of regulations to eliminate or reduce risks of strangulation to infants associated with crib toys. All interested persons are invited to submit to the Commission:

(1) Written comments concerning the risks of injury described in this notice and any other incident or medical data concerning strangulation associated with any crib toy; the regulatory alternatives being considered by the Commission to address those risks; and other possible alternatives to address those risks.

(2) Any market information regarding the annual sales and retail price for each of these types of toys, the share of the market for which imported items account, and the share of domestic manufacturers' sales derived from these products.

(3) The Commission is also soliciting estimates of the possible economic effect of potential mandatory actions, particularly those dealing with cord length, protrusion requirements, and labeling.

(4) Any existing standard or portion of a standard which could be published as a proposed regulation to address the risks of injury described in this notice.

(5) A statement of intent to modify or develop a voluntary standard to address the risks of injury discussed in this notice, together with a description of a plan to modify or develop that standard.

Any plan submitted with a statement of intent to modify or develop a voluntary standard should include, to the extent possible: A description of how interested groups and persons will be notified that a proceeding to modify or develop a voluntary standard is under way; a description of how the views of interested groups and persons will be addressed in the modification or development of the standard; a detailed discussion of how the modification or development of the standard will proceed; a realistic estimate of the length of time that will be required to modify or develop the standard; a list of persons expected to participate in the modification or development of the standard, together with information about their backgrounds and experience; and a description of any facilities or equipment that will be used during the project.

All comments and submissions should be addressed to the Office of the Secretary, Consumer Product Safety Commission, Washington, DC 20207, and received not later than December 18, 1990.

Dated: October 15, 1990.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

Bibliography

1. Memorandum to the Commission from Elaine A. Tyrrell, OPMB, concerning petition on crib toys, 14 pages, May 30, 1990.

2. Petition from Consumer Federation of America and the New York State Attorney General's Office requesting issuance of a rule to ban certain crib toys, 74 pages, November 17, 1988.

3. Report by Shelley Waters Deppa, Division of Human Factors, "Human Factors Evaluation of Provisions Which Address Crib Toy Strangulations in the Toy Safety Voluntary Standard," 21 pages, July 1987 (appendix B of petition).

4. Memorandum from Debbie Tinsworth, EPHA, to Elaine A. Tyrrell, OPMB, concerning strangulation-related incidents involving crib toys, 7 pages, June 22, 1987 (Appendix C of petition).

5. Summary of provisions requested by the petition, 1 page, undated.

6. Summary of actions requested by petition and comparison with conclusions of the staff of the Division of Human Factors, 1 page, undated.

7. Text of provisions of Standard Consumer Safety Specification on Toy Safety, ASTM F 963–86, applicable to crib toys, 1 page, April 1986.

8. List of documents published by the Consumer Product Safety Commission containing information about the safety of crib toys, 1 page, undated.

9. Memorandum from Carolyn Kennedy, ECCP, to Elaine Tyrrell, OPM, concerning market information about crib toys, 4 pages, March 20, 1987.

10. Log of telephone conversation between Douglas Thompson, Toy Manufacturers of America, and Colin B. Church, Office of the Executive Director, concerning safety issues related to crib toys and balloons, 1 page, June 6, 1987.

11. Log of meeting of ASTM F15.22 Task Group on February 28, 1990, to discuss balloon labeling and requirements for crib toys, 9 pages, undated.

12. Memorandum from Terri Rogers, Division of Corrective Actions, to Elaine A. Tyrrell, Office of Program Management, concerning crib toys, 1 page, May 7, 1990.

13. Memorandum from Debbie Tinsworth, EPHA, and John T. Kramer, EPHA, to Elaine Tyrrell, EXPM, concerning strangulations or near-strangulations involving crib toys, 8 pages including attachment, March 15, 1990.

14. Letter from Toy Manufacturers of America, Inc. to Chairman Jones-Smith concerning the crib toy petition, 7 pages, June 12, 1990.

15. Memorandum from Elaine A. Tyrrell, OPMB, to the Commission concerning the crib toy petition, 6 pages, June 26, 1990.

16. Memorandum from Terri Rogers, Division of Corrective Actions, to Elaine A. Tyrrell, OPMB concerning crib toys, 3 pages June 18, 1990.

17. Log of meeting of Commission staff and representatives of Toy Manufacturers of America on April 28, 1988, 2 pages.

18. Letter from Toy Manufacturers of America, Inc. to Chairman Jones-Smith concerning crib toy petition, 5 pages, July 11, 1990.

19. Memorandum from Elaine A. Tyrrell, OPMB, to Commission concerning crib toy petition, 1 page, August 7, 1990.

20. Memorandum from Terri Rogers, Division of Corrective Actions, to Elaine A. Tyrrell, OPMB, concerning crib toys, 1 page August 3, 1990.

21. Memorandum from Terrance R. Karels, ECPA, to Elaine A. Tyrrell, EXPB, concerning sales of crib toys, 2 pages, August 2, 1990.

22. Memorandum from Debbie Tinsworth, EPHA, to David W. Thome, EXPB, concerning injuries associated with crib toys, 1 page, August 1, 1990.

[FR Doc. 90-24804 Filed 10-18-90; 8:45 am]

BILLING CODE 6355-01-M

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

25 CFR Part 20

Consultation Hearings on Indian Social Services Programs Proposed Revisions

AGENCY: Bureau of Indian Affairs, Interior.

ACTION: Notice of consultation hearings.

In the matter of consultation hearings on the proposed amendments to the current regulations contained in 25 CFR part 20, Office of Tribal Services, Division of Social Services, Activity 3900, Element 22 funds and other Social Services issues.

SUMMARY: The Bureau of Indian Affairs (BIA), Office of Tribal Services, Division of Social Services announces forthcoming consultation hearings with tribal representatives, tribal members and other interested parties on proposed changes to the current regulations that govern Social Services Programs, 25 CFR part 20. The proposed regulatory changes involve all components of the Social Services Programs, including General Assistance, Child Welfare Assistance, Miscellaneous Assistance, Services to Families and Communities, Tribal Work Experience Program and Adult Care. The intent of the hearings is to consult with Tribes on the future direction of these programs.

DATES: *Date and time:* Hearing Dates: Three regional meetings have been scheduled for November 1, 1990, November 6, 1990 and November 8, 1990. The meetings are scheduled for 1½ days at each site. With the exception of Minneapolis, all meetings are scheduled to begin at 9 a.m. and end at 4 p.m. the first day. The meetings will resume at 9 a.m. and last until 12 p.m. the second day. The Minneapolis hearing will commence at 1 p.m. on November 8, and end at 5 p.m. on November 9, 1990. All meeting times are local time.

ADDRESSES: Hearing Locations: San Francisco, California November 1–2, 1990; Phoenix, Arizona November 6–7, 1990; Minneapolis, Minnesota November 8–9, 1990.

The conference locations for each site are being sent by mail to all Area Directors, Agency Superintendents and Tribal Leaders.

LOCATION CONTACT PERSON:

Aberdeen Area: Dean Krahulec (605) 226–7351
Albuquerque Area: Joe Naranjo (505) 766–3321
Anadarko Area: Jerry Bridges (405) 247–6673
Billings Area: Louise Zokan-Delos Reyes (406) 657–6651
Eastern Area: Evelyn Roanhorse (703) 235–2353
Juneau Area: Jimmie Clemmons (907) 586–7628
Minneapolis Area: Rosalie Clark (612) 349–3615
Muskogee Area: Alice Allen (918) 687–2507
Navajo Area: Nancy Evans (602) 871–5151
Phoenix Area: Elizabeth Blackowl (602) 241–2262
Portland Area: Robert Carr (503) 231–6783
Sacramento Area: Kevin Sanders (916) 978–4691

Interested persons may present oral testimony or file written statements. All written statements must be received no later than November 15, 1990, in the Bureau of Indian Affairs, Office of Tribal Services, Division of Social Services, room 3614, MIB, 1849 C Street NW., Washington, DC 20240, Attn: Ronal Eden, Deputy to the Assistant Secretary—Indian Affairs (Tribal Services).

FOR FURTHER INFORMATION CONTACT: David, Hickman, Chief, Division of Social Services or Deborah Maddox, Assistant Chief, Division of Social Services, Bureau of Indian Affairs, room 310 SIB 1849 C Street NW., Washington, DC 20240, (202) 208–2721; (202) 208–2835; or (202) 208–2536.

SUPPLEMENTARY INFORMATION: The current regulations that govern social services programs 25 CFR part 20, was revised in 1987. The revision was mandated with very specific criteria to be addressed. Since that time, there has been additional legislation and events that have occurred that must by law be incorporated into the regulations.

The draft regulations are available upon request and are being submitted to all Area Directors, Agency Superintendents and Tribal Leaders, prior to the hearings for preparatory comment time. Comments will be accepted both verbally and in written form. The intent of the hearings is to consult with tribal representatives on the future of the programs and the appropriate regulations that will be needed to assure compliance. Participation by tribal leaders is encouraged.

Dated: October 16, 1990.

Carol Bacon,

Acting Deputy to the Assistant Secretary, Indian Affairs (Tribal Services).

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Part 1910

[Docket No. H-041]

RIN 1218-AA83

Occupational Exposure to 1,3-Butadiene

AGENCY: Occupational Safety and Health Administration (OSHA), Department of Labor.

ACTION: Proposed rule; notice of extension of comment period, notice of change of hearing dates.

SUMMARY: On August 10, 1990, OSHA published a Notice of Proposed Rulemaking (NPRM) on Occupational Exposure to 1,3-Butadiene (BD) in the **Federal Register** (55 FR 32736). Included in the NPRM was a date by which public comments needed to be submitted and the schedule for public hearings. With this notice, OSHA is extending the dates for public comment and the dates for the public hearings. OSHA believes

D

CH 1-91-1

Daniel [redacted] P.E.

[redacted]

Oct 28, 1990

Office of the Secretary
Consumer Product Safety Commission
Washington, DC 20207

Ref. ANPR Strangulation Hazards Associated with Crib Toys.
F R October 19, 1990 Page 42402 Request for Comments

The respondent is a professional Engineer with over 40 years experience in safety evaluation of consumer products including toys.

The respondent supports, in principal, the Commission's proposal to develop requirements and/or labeling for the purpose of reducing the risk of strangulation associated with crib toys. The intent of this response is to express such support and at the same time to bring to the Commission's attention defects and deficiencies contained within the petition submitted by the Consumer Federation of America and the New York State Attorney General's Office. The deficiencies referred to generally result from a lack of precision of language used and more specifically from lack of definitive detail relative to criteria proposed which later may be the basis for acceptance or condemnation of toys in the market place. It is not the intent of the writer to "quibble", but as anyone involved in standard writing knows precision of language and measurement is essential for both compliance and enforcement.

Examples follow:

> "The horizontal member must be rigid and attached at or above the height of the crib side rails."
>
> It is assumed that the term "rigid" is used to define a structure that spans across the crib without any portion of it dipping below the crib rail height and the "at or above" is intended to eliminate a device that attaches to the rail but extends significantly below it. If my interpretation is correct would it not be better stated to require a horizontal member to

be attached to the crib rail with no portion of the member, excluding attached accessories, extending lower than "x" inches below the projected line formed by the rail tops.

"The horizontal member does not have any vertical protrusion."

Is that vertically up, vertically down or both? Is a string a vertical protrusion? May the rigid member be sculptured or must it be straight? Would formed animal figures appended above a horizontal member constitute protrusions?

"Ban any crib toy with cords or other components which form a perimeter greater than 14 inches."

The intent here is to exclude any combination of cords or rigid members from combining in such fashion as to form a loop having a perimeter in excess of 14 inches but it surely doesn't say it. In fact it could be interpreted to exclude a large dangling cloth clown face or similar decoration with no openings but with a perimeter in excess of 14 inches.

Exactly what is a protrusion that "can catch an infant's clothing or other items worn by an infant"?

Is a hand grip on an exercise gym a pull ring attached to a cord?

At what age can an infant push up on hands and knees and how high can an infant, who cannot push up, reach?

Relative to the proposed warning to keep toy away from baby's reach, some toys are intended to be touched by infants.

Some crib toys attach to headboards, some to rails and some do not attach to the crib at all. Apart from the fact that it is a good general safety suggestion, why should the toy warn to keep the mattress low and the rail high if the caution is not appropriate for the toy?

Lastly there are two distinct warnings both of which must be first. Which first comes first?

My comments are intended to be responsive only to the specific language of the petition and should not be construed to indicate acceptance or rejection of each individual proposal.

As earlier stated the intent of this response is not to quibble but rather to point out that, despite the good intention, the submitted petition is not an adequate base on which to build a regulation.

If available epidemiological data supports the need for a regulation, I respectfully suggest that the objectives of the Commission will be advanced by first convening an assembly of Manufacturers, Sellers, Testers and Adult purchasers of Crib toys for the purpose of establishing definable reproducible criteria. Those proposed by the petitioners are not suitable and are inappropriate as the base for initiation of a regulatory action.

Sincerely,

[redacted]

Daniel [redacted]

SILGO International™
Fine accessories and toys

CH1-91-2

November 6, 1990

Office of the Secretary
Consumer Products Safety Commission
Washington, D.C. 20207

Re: Advance Notice of Proposed Rulemaking for Crib Toys

I refer to the October 19, 1990 ANPR in the Federal Register (55 FR No. 203, pg 42402) which deals with rulemaking regarding labeling and other requirements for crib toys.

According to the ANPR, crib toys are those which are intended to be attached to or near a crib or playpen for use by children younger than two years of age.

By definition, a toy is an object for children to play with. Mobiles which are attached to the sides of cribs are not intended for children to play with and I believe should be treated in a differently than a toy whose purpose is to interact with the child by the child playing with the toy.

With reference to point #7 regarding the statement that should appear on the product, packaging and as the first item in any instruction accompanying the product I feel that the warning should not be the way it is now where it says "Keep toy away from baby's reach". Here again this is <u>not</u> a toy and as such should be referred to in a different way and the warning should read "THIS IS NOT A TOY AND IS NOT INTENDED FOR USE AS A TOY. Keep mobile away from baby's reach. Remove mobile and attachment clamp and music box attachment, if applicable, when baby begins to push up on hands and knees <u>or</u> is able to reach the mobile when the crib mattress is in the highest position."

It is my feeling that a clear distinction should be drawn with regard to what are crib toys and as such are designed for the sole purpose of amusing the child or the infant by having them play with the toy. A mobile is <u>not</u> designed as a toy but designed as visual stimulation for an infant in the crib. If this distinction is drawn then I believe that the warning should be as described above for the mobile and a different warning should be devised for a toy.

Sincerely,

[redacted]

Michael Silberstein
President

650 Arizona Street Chula Vista, California 92011 USA
(619) 420-9920 Fax: (619) 420-0836

SILGO International

CH 1-91-3

Kiddie Products Inc.

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December 5, 1990

Consumer Product Safety Commission
Office of the Secretary
Washington, DC 20207

Re: Advance Notice of Proposed Rulemaking
Strangulation Hazards Associated with Crib Toys
Federal Register Volume 55, No. 203
Friday, October 19, 1990, Page 42402

Dear Sir/Madam:

Having been involved in the discussions that have taken place between the Toy Manufacturers of America and the Commission regarding this subject since the filing of the petition in 1988, I can attest to the high level of frustration that we in the industry have experienced with this entire subject. There has been a tremendous amount of study and debate on the data cited by the petition, as well as the proposals to regulate the products involved. I feel that we have already addressed these issues with the Commission, but will try to express my personal views again in the hope that additional light will be shed on the issue.

The data used to support the petition are outdated relative to the ASTM F963 voluntary standard that addresses crib toys and mobiles, which was published in 1986. In fact, this very data was used to promulgate the standard. Any proposed modification to a current standard or rule, or initiation of a new rule, should be supported by data that is of more recent timing, and which is directly attributable to the failure of a standard or rule to prevent a particular injury. Data generated by products which do NOT comply with a standard or rule should certainly not be used to show that the rule is inadequate. The data used in the case at hand do NOT support any substantial rule modification or the promulgation of a new rule.

The proposals in the petition are vague and create more controversy than they resolve. Rigid horizontal members for crib attachable toys could potentially create additional hazards that have not been addressed, such as infants using these rigid members as pull up bars to escape the crib.

The definition of what exactly a "protrusion" is has been debated for quite some time without resolution. Until an adequate definition is available, any rule which uses such a term would be wide open to interpretation, thus creating more potential controversy and hazard than it would solve. "Vertical strings" is another phrase that is difficult to interpret adequately. In what position would the product have to be in order to determine if a vertical string existed?

There is still potential confusion in the proposals in the petition regarding the definition of a "crib toy." In some places, this term is used to specifically define "attachable" toys; in other places, it is used to mean crib gyms and mobiles. In still others, it does not limit its definition at all, but apparently includes ALL crib toys. This is clearly not sufficient for making any determination whatsoever of what is or is not adequate in current standards and rules or what potential changes should be made. The Commission or the petitioners would have to clarify the terms in order for an intelligent response to be made.

Notwithstanding the above issues that are major flaws in the petition which MUST be addressed prior to any serious consideration of a new rule, there has been work done to modify the ASTM F963 standard to further enhance its effectiveness. The members of the T. M. A. have agreed to several revisions to this standard, and I believe that based on the lack of adequate data to the contrary, these revisions will be sufficient to address the issues raised.

Until such time that a definitive new rule is proposed, I can provide no estimates of potential product redesign costs or effect on market share and prices. The vague nature of the petition proposals and the lack of definition of terms in it do not allow for any specific calculations to be attempted.

The Commission should be receiving a submission from the T. M. A. which details the proposed revisions to ASTM F963. Please refer to that submission for the revisions referenced here.

Sincerely,

[redacted]

Paul A. Ware
Vice President Quality Assurance

cc: R. Sidman
D. Miller, T. M. A. President
A. Locker, T. M. A. Counsel

RH 1-91-4

U.S. Public Interest Research Group

National Association of State PIRGs

December 12, 1990

Chairman Jacqueline Jones-Smith
Consumer Product Safety Commission
Washington, D.C. 20207

RE: 16 CFR Ch. II – Strangulation Hazards Associated with Crib Toys; Advance Notice of Proposed Rulemaking

Dear Chairman Jones-Smith:

The Public Interest Research Groups (PIRGs) strongly support the issuance of a rule to address the strangulation hazards associated with crib toys.

The PIRGs have long been concerned about unsafe toys, particularly those toys that pose choking and strangulation hazards to young children. In fact, we recently released our annual toy safety report, "Trouble in Toyland: Unsafe Toys in the United States," which listed 21 hazardous toys discovered on toy store shelves in October and November 1990. Our report focused on crib toys and toys that pose choke hazards for children under three.

Crib toys pose a serious hazard to infants and young children – strangulation. Intended for use by children younger than two years of age, crib toys are supposed to be attached to a crib or playpen. Tragically, these toys have been associated with at least 51 cases of strangulation or near strangulation incidents since 1973, according to Commission data. One child suffered severe brain damage and 31 children died. A majority of the victims were from six to twelve months old.

Despite these deaths and injuries, no mandatory standards regulate crib toys. The voluntary standard, ASTM F963-86, is inadequate to protect children from the strangulation hazards associated with crib toys.

The voluntary standard is inadequate for the following reasons:

1. The standard's 12" limit on cord length is not supported by current anthropometric data or by information concerning strangulation accidents;

U.S. PIRG 215 Pennsylvania Avenue, S.E. Washington, D.C. 20003 (202) 546-9707

2. Because the labeling requirement recommends discontinuation of use at precisely the time when the child is starting to use the toy, parents tend to ignore the caution to remove the crib gym when an infant is five months old;

3. The labeling requirement does not apply to mobiles even though the CPSC has reports of strangulation deaths associated with crib mobiles;

4. The standard does not address the strangulations that occur when an infant's clothing becomes entangled on protrusions of a crib toy; and,

5. The standard does not address entrapment hazards which may occur when an infant's head becomes entrapped in the opening formed by multiple cords of a crib toy, or by cords and a part of the crib toy.

Moreover, manufacturers are not even complying with the voluntary standard. For example, our 1990 toy safety report included three crib toys that pose strangulation hazards to infants who are able to push themselves up on hands and knees. None of the three crib gyms -- the Battat Baby Exerciser, Illco's Sesame Street Crib & Play Pen Toy with Peek-a-Boo Mirror, and Ambi Toy's Baby Trainer -- comply with the industry's voluntary standard (ASTM F963-86).

Our report was not intended to be a comprehensive list of dangerous toys. Instead, we believe the following three crib toys indicate that widespread nonconformance with the voluntary standard exists:

1.	Product:	Baby Exerciser
	Manufacturer:	Battat Inc. (U.S.A.) 2 Industrial Blvd. West Circle, Plattsburgh, N.Y. 12901 Made in Japan by Kawada Co., LTD
	Hazard:	Crib gym that poses strangulation hazard, age labeled for years 1/2 - 1 1/2

This crib gym violates the voluntary standard developed by the toy industry to prevent strangulation deaths and injuries to young infants. The adjustable straps that attach the crib gym to the crib are longer than 12" and pose a strangulation hazard. The toy's labeling is confusing -- there is a warning label in small print on the box and on the toy itself that says "Birth to 5 Months Caution: To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees," but in larger print (and in 6 different places on the box) the package carries an age recommendation of 1/2 to 1 1/2 years.

2. Product: Sesame Street Crib & Play Pen Toy with Peek-a-Boo Mirror
Manufacturer: Illco Toy Co., U.S.A., Inc.
New York, NY 10010
Made in China
Hazard: Crib gym that poses strangulation hazard, no warning label.

This crib gym violates the voluntary standard developed by the toy industry because it does not include a warning label to remove the toy from the crib when babies can get up on hands and knees. Moreover, the straps that attach the crib gym to the crib are 8 inches long -- long enough to pose a postural strangulation hazard. The mechanism that makes the mirror go "peek-a-boo" is too complex for an infant under 5 months old.

3. Product: Baby Trainer
Manufacturer: Ambi Toys
Amsterdam, Holland
Hazard: Crib gym that poses strangulation hazard, no warning label

This crib gym has no age labeling at all and does not include a warning label to remove the toy from the crib when the baby can get up on hands and knees. The straps that attach the crib gym to the crib are longer than 12 inches and pose a strangulation hazard.

Based on evidence of widespread nonconformance with the voluntary standard, the Commission should not simply revise the voluntary standard to further reduce the risks of strangulation associated with crib toys. Instead, we urge the Commission to issue a rule that includes all the requirements requested by the petition filed by the Consumer Federation of America and the New York State Attorney General's Office.

Cribs are the one place where parents expect to be able to leave their baby unattended. Crib toys should not be permitted to pose hazards to the very children for whom they are intended. Clearly the Commission must establish mandatory safety standards to end the needless deaths and injuries associated with crib toys.

Sincerely,

[redacted]

Lucinda Sikes
Staff Attorney

CH-1-91-5

December 13, 1990

Office of the Secretary
Consumer Product Safety Commission
Washington, D.C. 20207

Dear Sir,

Following are the comments of Fisher-Price regarding the Advance Notice of Proposed Rulemaking - Strangulation Hazards Associated With Crib Toys, 55 FR No. 203, P42402, October 19, 1990.

Fisher-Price agrees with the comments submitted by the Toy Manufacturers of America, Inc. We would also like to offer these additional comments.

The Advance Notice of Proposed Rulemaking has defined crib toys as "toys which are intended to be attached to or near a crib or playpen for use by children younger than two years of age". This definition, as mentioned by the TMA, may broadly be interpreted to include products other than those capable of producing a risk of strangulation. By specifying an age grade, products intended for children over two, which could attach to a crib or playpen, would be exempt from these requirements. We suggest the scope of application be defined by intended product use, not by age grade.

Fisher-Price shares the Commission's concern over hazardous protrusions on crib toys which may pose a risk of strangulation. We are not aware of any successful attempt to define such hazardous protrusions in specific terms, nor are we aware of any performance criteria under which protrusions could be reasonably and accurately evaluated. Lacking this information, we have suggested a design guideline for protrusions or catch points be added to ASTM F963-86 Standard Consumer Safety Specifications on Toy Safety (appendix A).

The petition from the Consumer Federation of America and the New York State Attorney General's Office requesting the banning of various crib toys contains two areas that are design restrictive. Their suggestions would effectively ban products which clearly pose no risk of strangulation to infants.

Fisher-Price, Division of The Quaker Oats Company, 636 Girard Avenue, East Aurora, New York 14052-1885 (716) 687-3000 Telex: 91520

First, they suggest

"Ban any crib mobile that can be attached to a crib unless the following statement appears clearly and conspicuously on the product, its packaging, and as the first item in any instructions accompanying the product:

Warning

Keep toy away from baby's reach.
Remove mobile and attachment clamp (and music box attachment, if applicable) when baby becomes 5 months of age or begins to push up on hands or knees.
Child could strangle if clothing, head or neck gets caught on toy part."

These warnings eliminate the possibility that a manufacturer could produce a product where the mobile is detachable, leaving a music box attachment that is safe in the crib environment. Appendix B illustrates the Fisher-Price Tape Player Mobile. Once the mobile attachment is removed, the remaining tape player attached to the crib rail presents no hazard to the infant.

Secondly, The petition recommends,

"Ban any crib toy which fails to include a conspicuous warning as the first item in any instructions accompanying the product to advise that when the toy is used in the crib, the crib sides should be raised and the crib mattress should be in one of the lower positions, or a strangulation hazard may result".

Thus, a product such as the Fisher-Price Crib Wrap Arounds (Appendix c) would be required to include a warning in the instructions to place the crib mattress in one of the lower positions. Obviously, these products present no risk of injury, regardless of the location of the crib mattress support. Such a warning would be misleading and confusing to the consumer, and is completely unnecessary. It is the belief of Fisher-Price that such a warning should be reserved for products that could present a strangulation hazard if used with the mattress support in its upper most position.

Thank you for considering these comments.

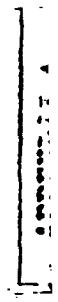
Respectfully submitted,

[redacted]

Kitty Pilarz

Manager of Product Safety
and Reliability

cc: Chuck Brooks
Bruce Oravec



DESIGN GUIDELINES

Purpose & Scope

To provide guidance for design practices intended to encourage the careful examination of product characteristics and configurations with respect to safety.

Toys Attached to Cribs or Playpens

Designs for all products intended to be attached to cribs or playpens should be accomplished in a manner that minimizes the potential for strings, ribbons, elastic or parts of clothing to become caught on the product, such that an infant is placed in a dangerous predicament where possible strangulation could occur.

Examples of the implementation of good design practices for crib and playpen environments include:

A. Rounded Corners with the use of generous radii wherever possible.

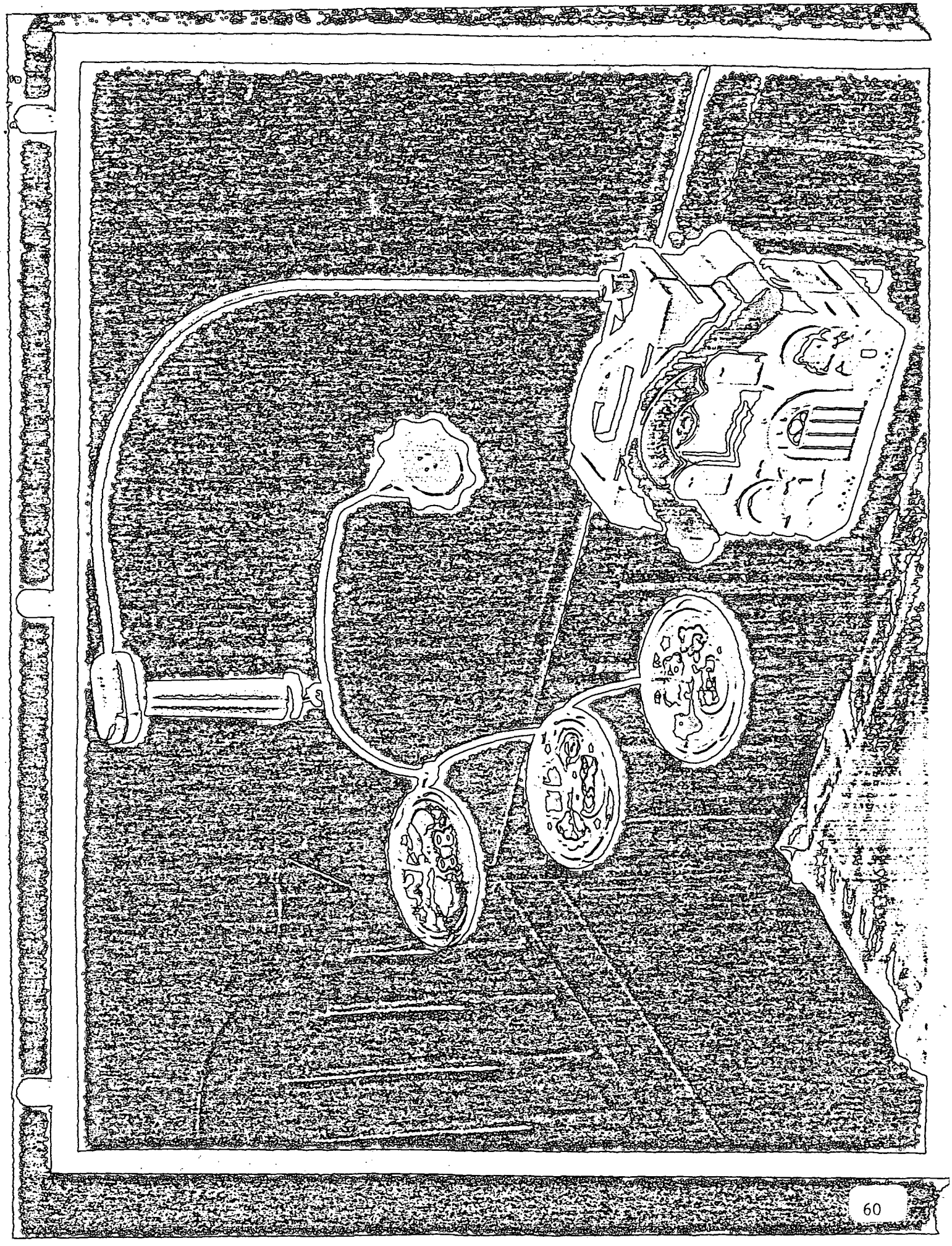
B. Smooth contours which minimize abrupt changes in shape that could easily become a catch point for strings, ribbons, elastic or loose clothing.

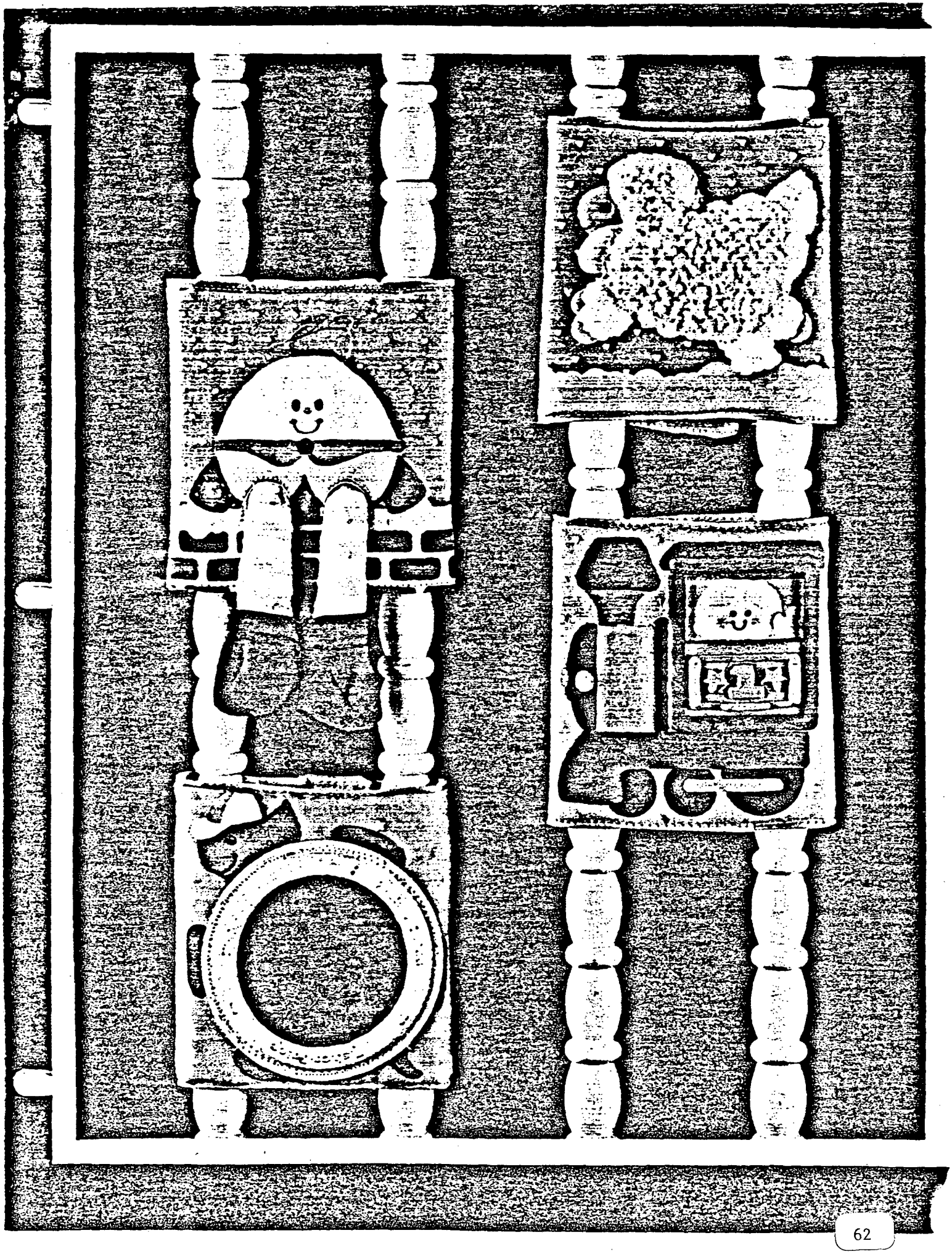
C. Isolation of fastening hardware using recesses, counter-bores, or other similar methods.

D. Reducing the potential for any mismatch of surfaces where a catch point could develop.

C.A.B. (4/13/88)

ANEXO A





CH 1-91-6

Before the United States Consumer
Product Safety Commission
----------x

In The Matter of the Advance Notice
of Proposed Rulemaking-Strangulation
Hazards Associated with Crib Toys
55 FR No. 203, Pg. 42402
October 19, 1990

----------x

COMMENTS OF TOY MANUFACTURERS OF AMERICA, INC.

Toy Manufacturers of America, Inc. (TMA) is a trade association composed of manufacturers of toys, games and christmas ornaments. Its members account for approximately 90% of the $12.5 billion in annual sales of such articles at the retail level. The industry sells approximately 2 billion units a year. It produces approximately 150,000 different designs with 5,000 new designs introduced annually.

The United States Consumer Product Safety Commission has issued an Advanced Notice of Proposed Rulemaking (ANPR) which may result in the labeling and other requirements for crib toys to address the risk of strangulation to children associated with those products. The term "strangulation" is defined to mean asphyxiation due occlusion of respiration and/or circulation by external compression of the neck.

Crib toys are defined as toys intended to be attached to or near a crib or playpen for use by children younger than two years of age.

The Commission has received reports of 51 incidents of strangulation or near strangulation since 1973 which are associated with crib toys.

The Commission is seeking comments on the following:

1. Written comments concerning the risks of injury described in this notice and any other incident or medical data concerning strangulation associated with any crib toy; the regulatory alternatives being considered by the commission to address those risks; and other possible alternatives to address those risks.

2. Any market information regarding the annual sales and retail price for each of these types of toys, the share of the market for which imported items account, and the share of domestic manufacturers' sales derived from these products.

3. The Commission is also soliciting estimates of the possible economic effect of potential mandatory actions, particularly those dealing with cord length, protrusion requirements, and labeling.

4. Any existing standard or portion of a standard which could be published as a proposed regulation to address the risks of injury described in this notice.

5. A statement of intent to modify or develop a voluntary standard to address the risks of injury discussed in this notice, together with a description of a plan to modify or develop that standard.

TMA submits the following comments:

1. The risks of injury presented by crib toys and the incident data associated with these products.

TMA notes and calls the Commission's attention to the fact that the Product Summary Report for the National Electronic Injury Surveillance System (NEISS) released by the Commission for the year 1989 in the product code number 1526 bearing the title Crib Mobiles or Crib Gyms indicated only a single incident associated with this category of product. This single incident is less than the regulated product in product code 1525 Pacifiers (or teething rings) which have four in 1989. In 1988 the NEISS Data Product Summary Report for the category had two incidents reported as

compared to product code 1525 pacifiers which had five. In 1987, product code 1526 reported two compared with 1525 reporting three and in 1986, the 1526 product code had three incidents while pacifiers had four. In 1985, product code 1526 had two incidents while pacifiers had four. In all the years in question, the sample count for the crib toys in product code 1526 was less than the regulated product in 1525 . In all cases, both for regulated and unregulated products there was insufficient injury data to enable the Commission to come up with a national injury estimate for the product category.

The injury data base for these products (or lack of it) is cited as support for the rule being considered in the ANPR covers a 15-year period from 1973 through April of 1987. See the July 1987, HUMAN FACTORS EVALUATION OF PROVISIONS WHICH ADDRESS CRIB TOY STRANGULATIONS IN THE TOY SAFETY VOLUNTARY STANDARD BY Shelley Waters Deppa. All of these accidents with the exception of 2 occurring in 1987 had been brought to the attention of the industry by the staff of the Commission when the industry promulgated ASTM F963-86, the most recent updated voluntary standard for safety in toys. The standard incorporated specific changes which were urged upon the industry by the staff of the Commission based on the same data base which is cited in support of the ANPR. Succinctly put, this data base and the instances cited therein were utilized by the industry voluntary standard for safety in toys which was adopted in April 1986.

The staff has informed the industry that it has no data other than the aforementioned data upon which to base its recommendations. Moreover, the staff has advised the industry that it has no data evidencing injuries associated with toys that are in full compliance with provisions of the toy voluntary standard.

The ANPR notes 14 recent substantial hazard files cases involving crib toys which were treated as substantial hazards files opened by the compliance staff which are used as evidence of the need for a crib toy regulation. The staff argues that most of these products did not conform to the existing industry voluntary standard provisions for crib toys. In 7 of 10 of those cases for which TMA has received the CPSC press releases no incidents or injuries had been reported. It is obvious that the compliance staff utilizes these provisions of the voluntary standard to define substantial hazards. In our experience the compliance staff will always proceed against a crib gym which did not contain the labeling required in the voluntary standard. Moreover the ANPR does not provide the date of manufacture of the 14 toys involved. TMA believes that the manufacturing date of many, if not all of these toys, pre-dates the 1986 amendment to ASTM F963-86. Several of the 51 reported incidents involved home-made toys or consumer modified toys, e.g., in five cases consumers added strings or cords to toys to attach them to the crib or playpen.

2. Market information regarding annual sales and retail pricing of these toys, etc.

TMA estimates that approximately 55 million units of a total value of $350,000,000 in this product category are sold annually at prices ranging from $2.00 to $50.00.

3. Economic Impact of Regulation.

Without specific knowledge of the kind of regulation that is to be proposed, it is impossible to estimate any impact of the proposed rule on the market for these products. The information we would require includes the following:

(a) the precise definition of products and terms included within the scope of any proposed regulation.

(b) the precise performance and/or design requirements and the test methods applicable;

(c) The precise wording of any required labeling instructions, or consumer information.

(d) The precise wording of any regulation or ban.

(e) Proposed effective date for any such requirements.

4. Any Existing Standard or Portion of a Standard which would be published as Proposed Regulation.

TMA submits that the crib toy provisions of its voluntary standard ASTM F963-86 may be published as a mandatory standard or rule. These provisions are found in Sections 4, 5 and 6 of the Standard. Various sections of the standard applicable to crib toys have been the subject of proposed amendments which are annexed hereto as Exhibit B. A copy of ASTM F963 is annexed as Exhibit A.

TMA submits the following comments on the particular toys which are the subject of rulemaking petition and the voluntary

standard. The provisions of TMA's voluntary standard address five types of toys which are targeted in the ANPR and were involved in all but two of the known incidents cited in the petition filed by the Consumer Federation of America and the July 1987 HUMAN FACTORS EVALUATION OF PROVISIONS WHICH ADDRESS CRIB TOY STRANGULATIONS IN THE TOY SAFETY VOLUNTARY STANDARD by Shelley Waters Deppa.

A. Crib Gyms. Labeling is specified for crib gyms and toys intended to be strung across a crib which was developed and implemented with the Section 15 Compliance Staff of the Commission. See Section 5.4.1 ASTM F963-86. Toys not in conformance with the provisions of this section of the standard have been treated, on a case-by-case basis, as toys which present a substantial risk of injury by the Compliance Staff of the Commission. We do not believe that crib gyms which do not meet the requirements of the standard are currently being manufactured by members by TMA.

Furthermore, we believe that the design and labeling changes sought by the petition filed by CFA and being discussed in the ANPR are internally inconsistent and might actually increase the risks of injury associated with this product for the following reasons:

(1) CFA's petition and the recommendations by Deppa would imply that with certain technical fixes, a crib toy attached across a crib could be left attached there for a longer period of time. TMA continues to agree with the CPSC staff's original recommendation, to remove such toys when the child begins to push up on hands and knees and believes that the Voluntary Standard's labeling provisions should remain intact. Maintaining the label, advising parents to remove the toy from the crib when the child can raise itself to its hands and knees or when it is five months sof age is desirable to avoid any potential for postural strangulation.

(b) Redesigning the gym to provide a solid bar for the entire width of the toy and leaving it in the crib after the child is five months old will increase the likelihood that the child will eventually use it as a stepping device to climb out of and possibly fall from the crib.

B. Suspended stuffed toys which are suspended by two or more cords converging above the toy which can be attached to the crib are prohibited by the voluntary standard. This prohibition was based on a compliance staff determination that such toys were defective and presented substantial hazards. We do not believe that members of TMA produce these improperly labeled toys and that they are currently in the market. The rationale for ASTM F963-86 clearly identified this risk of injury as being within the scope of the standard.

> 4.13 Strings and Elastics - These requirements for crib and playpen toys have been revised to expand the scope of applicability to any crib or playpen toy (excluding pull toys for which there are separate requirements) regardless of construction. If one or more attached strings or cords form a loop or can tangle to form a loop then the perimeter of that loop is limited to less than 14 inches. (From the Rationale originally developed for PS72-76, the limitation would prevent that loop from slipping over a child's head). Accident reports provided by the CPSC indicated that the potential for strangulation exists when multiple strings or cords on a toy form a loop which can slip over a child's head.
>
> Separate requirements for crib and playpen toys intended to be strung across a crib are included at Section 4.25.

Section 4.13.1 of the voluntary standard which deals with strings attached to any toy was intended to minimize hazards that might be caused by flexible strings and elastic. The language that "when string can tangle to form a loop" was specifically inserted in the standard to address the strangulations which occurred in the late 70's associated with multiple strings on suspended stuffed

toys. That incident data was before the ASTM Task Group when it made those revisions in 1986. See Section 4.13.1 ASTM F963-86 and additional clarifying language as proposed in Exhibit B.

C. Cord activated toys which are attached to the crib at one or more points and hang in the crib were subjected to limitations on cord lengths. These limitations were also developed with the Section 15 compliance staff and implemented on a case-by-case basis. Violations of the standard have likewise been treated as Section 15 substantial hazards by the Compliance Staff of the Commission. TMA members do not believe the toys which are currently sold are in violation of the standard. See Section 4.13.1 ASTM F963-86.

D. Activity boxes which are cited as the cause of two deaths one of which was attributed to postural strangulation are covered by the provisions of the voluntary standard. The hazard associated with one of those products was not addressesd by the provisions of the voluntary standard only because the short broken string length involved contributed to the incident in which the flexible mesh sides of the playpen stretched to enable the child's head to be wedged between the toy and the side of the playpen. This matter has been addressed by labeling developed with the Section 15 Compliance Staff and the manufacturer involved.

E. Crib Mobiles. These products are the subject of specific labeling requirements for the product, packaging and instructions proposed for amendment to ASTM F963-86. See Sections 5-11-5.11.3

and Sections 6.4-6.5, Crib Mobiles Labeling Requirements, Exhibits A and B.

5. Additional Comments

A. Protrusion Hazards

Neither the staff nor the industry has been able to develop performance requirements for defining a hazardous protrusion. It is obvious that no toy having more than a single dimension could be developed which did not have a potentially hazardous protrusion. Even a toy in a single plane could have a rounded corner which could represent a potential catch point for clothing or anything else strung around the neck of the child in a crib. The staff apparently has forgotten that, at a 1984 ASTM Task Group meeting which Ms. Deppa and Mr. Preston attended, the industry requested that Ms. Deppa provide the Committee with a definition of a hazardous protrusion. This definition was not forthcoming from the commission staff in the more than six years since it was requested, nor has industry been able to develop such a definition.

B. Definition of Crib Toys

TMA does not understand the meaning of the term as defined in the ANPR when it references a crib toys as one which is used "near a crib". Arguably any toy in any child's room is near a crib. The regulation should be more precise in defining a crib toy.

We feel strongly that the definition of crib toys should be changed such that it applies only to toys intended for children younger than 18 months of age. The reasons for this age specification are as follows:

1. This would be consistent with Section 1500.51 of the Federal Hazardous Substances Act which specifies test methods for simulating use and abuse of toys and other articles intended for use by children 18 months of age or less. Paragraph (b)(3) specifies conducting a drop test from 4.5 feet which is known to be the height of a crib toy rail and the test is to simulate a child's pushing a crib toy over the side rail of the crib and onto the floor.

2. It is known from Debbie Tinsworth's report to Elaine Tyrrell of June 22, 1987 entitled Strangulation - Related Incidents Involving Crib Toys, that 84% of the victims were 12 months old or less. Only 2 victims were over the ae of 16 months.

3. Toys attached to the crib can be used as toe holds when the child is unattended, and should not be left in the crib as the child begins to climb. The Commission's own consumer safety literature advises removal of toys which can serve as toe holds.

4. CPSC's Guidelines for Relating Children's Ages to Toy Characteristics documents the following statements which support that crib toys are not appropriate for children 18 months of age and older:

"Grasping toys are toys for simple hand manipulation designed for infants and toddlers. They are seldom of interest to children beyond 18 to 24 months of age." (Page 33).

"Between 18 and 24 months, toddlers become very interested in exploring and exploiting their capacities for movement. They also are especially interested in exploring positions in space and particularly what it feels like to be up high. These interests lead them to want to climb and slide; and most toddlers have become skilled and confident enough to do so without assistance." (Page 59).

"After 18 months, children become increasingly purposeful in their use of objects. They are interested in shape sorting, form boards, simple puzzles and more complex nesting toys. They can now nest or stack four or five pieces correctly and can fit several shapes into a shape sorter." (Page 103).

"After eighteen months, the child can lace with lacing cubes or boards which have thick string and a thick, blunt spindle to push through the holes." (Page 111).

"Dollhouses are another important type of miniature world. Children begin to exhibit this kind of pretend play between 18 and 24 months, as they develop the mental capacity for make-believe." (Page 163).

"The child's interest in realism and detail continues to increase in the 18 to 24 month period." After about 18 months, when they are steady walkers, children can pull cars or trains on strings." (Page 172).

"During the 18 to 24 month period, children's behavior becomes more purposeful and goal-directed." (Page 197).

C. Definitions

Both the CFA petition and the ANPR used terms relating to crib toys which are not precisely defined. These terms include the term "rigid" which is intended to be a structure that spans a crib without extending below the projected line formed by the side rail tops. "Hazardous Vertical Protrusions" are targeted for prohibition. Is that vertically up or down or both? Is a string a vertical protrusion? If the "rigid" member were sculptured, would it contain a vertical protrusion, e.g. would formed animal figures attached to a horizontal member constitute vertical protrusions?

What is a protrusion that can catch an infant's clothing or other items worn by an infant? Would it include a handgrip or a pull attached to a cord on an exercise gym? Many activity boxes contain attachments which are developmental and intended to be grasped by a child which might qualify as protrusions.

These are but a few of the questions raised by the petition and the ANPR. However well intentioned, it is the belief of TMA that the petition is not adequate to support a regulation of the type suggested in the ANPR and that the injury data base cited in the ANPR does not support the need for a crib toy regulation. The ANPR is conspicuous in its failure to establish that toys which conform to the industry voluntary standard (ASTM F963-86) as adopted and as proposed to be amended in Exhibit A do not adequately and sufficiently address the risk of injury cited in the ANPR. The Association believes that the standard addresses these risks and is being complied with and that no real basis for the crib toy regulation exists. The ANPR should be withdrawn.

Respectfully submitted
LOCKER, GREENBERG & BRAININ, P.C.
Attorneys for Toy Manufacturers of America
One Pennsylvania Plaza
New York, New York 10119

Dated: New York, New York
December 14, 1990

Designation: F 963 – 86

AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Consumer Safety Specification on TOY SAFETY[1]

This standard is issued under the fixed designation F 963; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

The purpose of this consumer safety specification is to establish nationally recognized safety requirements for toys. Although this specification will not eliminate the need for the exercise of parental responsibility in selecting toys appropriate to the age of the child, or parental supervision in situations where children of various ages may have access to the same toys, its application will minimize accidents in the normal intended use and in reasonably foreseeable abuse of the toys covered by the specification. This specification was originally developed as a Voluntary Product Standard under the auspices of the National Bureau of Standards, Department of Commerce, and published in 1976 (PS 72-76). The present revision is intended to update the safety requirements to include by reference, published federal mandatory requirements, relevant voluntary standards, certain new requirements to address potential hazards, and several technical revisions based on producer experience with the original standard. In addition, where appropriate, test criteria have been updated to reflect more current anthropometric data on U. S. children.

1. Scope

1.1 This specification[2] relates to possible hazards that may not be readily recognized by the public, and which may be encountered in the normal use for which a toy is intended, or after reasonably foreseeable abuse. It does not purport to cover every conceivable hazard of a particular toy. This specification does not cover product performance or quality, except as related to safety. Except for the labeling requirements pointing out the functional hazards and the age range for which the toy is intended, this specification has no requirements for those aspects of a toy that present an inherent and recognized hazard as part of the function of the toy. Such an example is a sharp point necessary for the function of a needle. The needle is an inherent hazard that is well understood by the purchaser of a toy sewing kit, and this hazard is communicated to the user as part of the normal educational process.

1.2 On the other hand, while a riding toy has inherent hazards associated with its use (for example, falling off onto the sidewalk), the possible hazards associated with its construction (sharp edges, exposed mechanisms, etc.) will be minimized by the application of this specification.

1.3 This specification covers requirements and contains test methods for toys intended for use by children in age groups through 14 years. Different age limits for various requirements will be found in this specification. These limits reflect the nature of the hazards and the expected mental or physical ability, or both, of the child to cope with the hazards.

1.4 Articles not covered by this specification are:

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[1] This consumer safety specification is under the jurisdiction of ASTM Committee F-15 on Consumer Products and is the direct responsibility of Subcommittee F15.50 on Standards Development.

Current edition approved Feb. 27, 1986. Published April 1986.

[2] The rationale for this specification may be obtained from ASTM Headquarters. Request RR: F15-1000.

Exhibit A

ASTM std Consumer safety Specification on Toy Safety

TOY MANUFACTURERS OF AMERICA

PROPOSED CHANGES TO ASTM F963-86 AS IT RELATES TO CRIB TOYS

Clarification of 4.13.1

4.13.1 Change to read as follows:

4.13.1 Crib and Playpen Toys -- Flexible strings or cords attached to any toy (excluding pull toys - see 4.13.2) shall be less than 12 inches (300mm) when measured to the maximum length in the free state. If string or multiple strings can tangle and form a loop in connection with any part of the toy, then the perimeter of the loop shall be less than 14 inches (360mm).

Text Change for 4.25

4.25 Change to read as follows:

4.25 Crib Gyms, Crib Exercisers, Crib Mobiles and Similar Toys -- Toys intended to be strung across a crib or playpen and mobiles intended to be attached to a crib or playpen shall bear cautionary labeling and shall comply with requirements for accompanying instructions as stated in the following sections.

4.25.1 Crib Gyms, Crib Exercisers, and Similar Toys intended to be strung across a crib or playpen shall bear the cautionary label as described in 5.4.1 and shall comply with requirements of 6.3 for accompanying installation instructions.

4.25.2 Crib Mobiles intended to be attached to a crib or playpen shall bear the cautionary label as described in 5.11.1 and shall comply with the requirements of 6.4 for accompanying installation instructions.

4.25.3 Crib Mobiles intended to be attached to the wall or ceiling shall bear the cautionary label as described in 5.11.2 and shall comply with the requirements of 6.4 for accompanying installation instructions.

Text Change 5.2 and 5.4

5.2 Change 3rd sentence to read:

In addition, the toys falling under the requirements of 4.19.2, 5.3, 5.4, and 5.11 shall themselves be labeled with the word "caution" and a statement of the hazard .....

5.4 Add to the text:

(See 5.11 Crib Mobiles)

Crib Mobiles - Labeling Requirements

5.11 Crib Mobiles -- These requirements are intended to alert consumers to the possibility that a child may become entangled in the toy or its attaching components.

5.11.1 Crib mobiles intended to be attached to a crib or playpen and their packages shall bear the following labels or markings:

(1) "From birth to 5 months", and
(2) "CAUTION: Keep mobile out of baby's reach. To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees."

5.11.2 Crib mobiles intended to be attached to the wall or ceiling and their packages shall bear the following label or marking:

"CAUTION: To prevent possible entanglement injury, keep out of baby's reach."

5.11.3 These labels or markings shall remain legible after use and reasonably foreseeable abuse and shall conform to the same requirements as those for the package.

Crib Mobiles - Accompanying Instructions

6.4 Crib Mobiles -- Instructions for proper assembly, installation, and use shall be provided with crib mobiles to assure that the product does not present an entanglement hazard. The instructions should include at least the following information:

6.4.1 A crib mobile is intended for visual stimulation and is not intended to be grasped by the child.

6.4.2 If attached to the crib or playpen, remove when baby begins to push up on hands and knees. If so designed, mount on wall or ceiling clearly out of standing baby's reach.

6.4.3 If mounted on wall or ceiling, install the mobile clearly out of standing baby's reach.

Accompanying instructions for toys intended to be attached to a crib or playpen.

6.5 Toys intended to be attached to a crib or playpen -- Installation instructions for toys intended to be attached to a crib or playpen should include:

(1) Always attach all fasteners (strings, straps, clamps etc.) tightly to crib or playpen according to the instructions. Check frequently.

(2) Do not add additional string or straps to attach to crib or playpen.

CH 1-91-7

OSPIRG
The Oregon State Public Interest Research Group
1536 SE 11th Portland, Oregon 97214 (503) 231-4181, FAX: (503) 231-4007

Comments of Jon Stubenvoll
Consumer Advocate
submitted to the
Consumer Product Safety Commission
in support of
Advance Notice of Proposed Rulemaking
Strangulation Hazards Associated With Crib Toys
December 14, 1990

The Oregon State Public Interest Research Group, OSPIRG, wishes to thank the Commission for proceeding on this important rulemaking and urges the Commission to adopt rules incorporating the proposed changes.

Since 1986, OSPIRG has been active in the area of toy safety. Our work has included identifying hazardous toys on the market, public education, and advocating safer toys.

Each year, OSPIRG conducts market surveys to identify hazardous toys. These toys are then turned over to Commission staff for possible enforcement actions. Since 1988, six toys, including one crib gym, identified in OSPIRG reports have been recalled from the market by the Commission. In addition to OSPIRG's concern for the safety of infants and children, it is this experience with market surveys and recalls that leads us to submit these comments on crib toys.

OSPIRG's retail observations convince us that the voluntary crib toy safety standard, ASTM F963-86, does not enjoy universal compliance among manufacturers. Further, apart from lack of compliance, we believe that the current voluntary standard is inadequate in scope to protect vulnerable infants. Therefore, OSPIRG believes that the Commission should adopt rules that include all of the

proposals in the petition submitted by the Consumer Federation of America and the New York State Attorney General. OSPIRG believes that these proposals must become Commission regulations, not simply voluntary standards.

As you know, the Commission has information about at least 31 deaths and approximately 20 other incidents involving crib toys. OSPIRG believes that these tragic incidents point out the inadequacies of the current voluntary standard.

The current standard does not adequately address a number of risk factors including length and rigidity of horizontal suspension members, pull rings, and rigid protrusions. The current standard is also flawed in its recommendations for labeling of safety information on packaging, the owner's manual or instructions, and on the toy itself. Finally, because the current standard is only voluntary, it does not enjoy complete and uniform compliance among toy manufacturers.

OSPIRG's experiences with two crib toys point out the deficiencies of the current voluntary standard. First, in 1988, OSPIRG brought to the attention of Commission staff the hazards associated with the L'il Tots Baby's 1st Gift Set manufactured for the McCrory Corporation of York, Pennsylvania. This toy was recalled in 1989.

The toy contained various squeeze and rattle toys along with a set of five plastic bells strung from a 28 inch plastic cord. The length and flexibility of the cord posed a postural strangulation hazard. Further, not only did the toy completely lack any warning labels on the packaging or on the toy itself, but the labeling that was on the packaging was actually detrimental to the infant's safety. For example, the package carried an age recommendation of 3

to 18 months and prominently displayed the words "Healthy, Safe Fun!"

In this case, the toy manufacturer did not provide warnings about the toy's potential hazard. Also, the manufacturer seemed to imply that the toy was safe for infants up to 18 months of age, well beyond the age at which an infant would be at risk from the toy's postural strangulation hazard.

The second crib toy in our experience was found on the market in November 1990. This toy is the Baby Gym manufactured by Ambi Toys of Amsterdam, Holland. While this crib toy does have warning labels, it also has two fabric cords used as horizontal suspension members. Each of these cords is longer than 17 inches, violating the voluntary standard of 12 inches, and exposing the infant to a postural strangulation hazard. This toy has been brought to the attention of Commission staff.

In sum, OSPIRG feels strongly that the current crib toy voluntary standard is inadequate in scope and in compliance. We urge the Commission to adopt as rules the proposals in the Consumer Federation of America and New York State Attorney General petition.

In conclusion, OSPIRG believes that much needs to be done proactively to protect the safety of infants and children. Reactive tools, such as recalls, are important, but limited in their ability to set safety standards for the marketplace. Despite all the good work done by the Commission and its staff in recalling hazardous products from the market, it will always be difficult to keep up with the constant flow of new hazardous products that enter the market.

The petition before you offers a golden opportunity to proactively set important new standards for crib toy safety. By banning the most hazardous of these toys, the Commission can ensure that infants are not (at least not legally) exposed to the documented strangulation hazards posed by these toys. One proactive measure is worth a thousand recalls.

Thank you for your attention to this matter. If you would like further information or have questions, please contact me at the above address.

CH 1-91-8

December 17, 1990

Ms. Sadye Dunn
Office of the Secretary
Consumer Product Safety Commission
Washington, DC 20207

Dear Ms. Dunn:

On behalf of Dolly, Inc. ("Dolly"), a manufacturer of crib mobiles, I would like to comment on the Advanced Notice of Proposed Rulemaking for Crib Toys dated October 15, 1990, issued by the Consumer Product Safety Commission (the "Commission").

We believe that the concerns expressed in the joint petition filed with the Commission by the Consumer Federation of America and the New York State Attorney General (the "Petition"), are sufficiently addressed by various federal regulations, the Voluntary Standard ASTM F963.86 and proposed amendments to the Standard. While the Petition indicates that based on data compiled between 1973 and 1987 industry members are not adequately complying with the provisions of ASTM F963.86, we believe that this data does not reflect the present practices in the industry. The problems identified in the data were taken into account in ASTM F963.86 which was not published until 1986. A mandatory regulation and/or banning of crib mobiles based primarily upon data collected prior to the publishing of ASTM F963.86 is unjustified.

As a manufacturer of crib mobiles our comments are directed to this category of products, more particularly, to our crib mobiles. Crib mobiles, if properly designed and installed in accordance with proper labeling and instructional materials provide a safe early learning device and form of entertainment for infants. The crib mobiles manufactured and sold by Dolly are carefully designed and tested to be safe when used around a crib, and contain detailed instructions and warnings to ensure safe use. If the instructional material and warning labels to the mobiles are followed, the mobiles will not come into contact with the infant.

The crib mobile design manufactured by Dolly has been tested by an independent testing laboratory and presently meets all applicable requirements of ASTM F963.86. In addition, Dolly intends to fully comply with any additional standards promulgated under ASTM F963.86 in the future. As evidence of the effectiveness of ASTM F963.86, and the resultant safety of crib mobiles, Dolly points out that it has sold over 3 million crib mobiles since 1983 and no situation exists in which a Dolly crib mobile has been found to have caused an

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infant injury. In sum, we believe that the design of Dolly's crib mobiles along with the effective use by Dolly of instructional material and warning labels has produced a product that provides a safe source of audio and visual stimulation for an infant. We also believe that the provisions of ASTM F963.86 have provided Dolly and other manufacturers with sufficient objective criteria and standards to enable them to manufacture these safe products.

Not only do we believe that the mandatory regulations and/or banning of crib mobiles proposed by the Petition are unnecessary, we also believe that the proposed regulations are vague and contain overly broad generalizations. The regulations proposed in the Petition do not define with reasonable clarity performance tests which are repeatable and which will provide objective criteria for any regulation. Therefore, if the regulations as proposed in the Petition are implemented by the Commission they will not provide standards and/or procedures necessary for adequate compliance and will in effect prohibit the manufacture of products which already have an established track record for safety. If the Commission believes that ASTM F963.86 does not adequately address the risks of strangulation and injuries associated with crib mobiles, we believe that the best solution is not to ban crib mobiles or provide for mandatory regulation, but instead to amend ASTM F963.86 to address such risks.

For over 50 years, Dolly has manufactured and sold various types of products which have been safely used by millions of concerned parents in connection with the education and entertainment of their children. Dolly is indeed interested in the safety of infants and young children and has taken all reasonable steps in the past to ensure the quality and integrity of its products and will take all steps necessary in the future to maintain its reputation for safe products. Dolly firmly believes that the present standards, namely ASTM F963.86, provide sufficient criteria which address the concerns stated in the Petition and therefore, render any mandatory regulations and/or banning of crib mobiles unnecessary.

If you have any questions or comments with regard to this matter, please do not hesitate to contact me.

Very truly yours,

Dennis J. Sullivan

Dennis J. Sullivan
President & CEO

DJS/cg

12170ds4

CH1-91-9

MASSPIRG

MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP

December 17, 1990

Chairwoman Jacqueline Jones-Smith
Consumer Product Safety Commission
Washington, DC 20207

RE: 16 CFR CH.II -- STRANGULATION HAZARDS ASSOCIATED WITH CRIB TOYS; ADVANCE NOTICE OF PROPOSED RULEMAKING.

Dear Chairwoman Jones-Smith:

The Massachusetts Public Interest Research Group (MASSPIRG) strongly supports the issuance of a rule to address the above problem, the strangulation hazards associated with crib toys.

As you know, the PIRGs nationwide have long been concerned about unsafe toys, particularly those that pose choking and/or strangulation hazards to young children. As a result of this concern, MASSPIRG recently surveyed retailers in the commonwealth to determine whether or not there were unsafe toys on our shelves. The result of this survey is our first annual toy safety report, Trouble in Toyland, a copy of which has been sent to you under separate cover. Our survey focused on two types of toy hazards: (1) toys with small parts which cause choking hazards and (2) crib toys which cause strangulation hazards. What we found were a number of violations of current regulations and a number of toys which we believe to be hazardous although they do not violate current regulations which we believe should be strenghthened.

It is well known that crib toys can pose a serious strangulation hazard to infants and young children. According to CPSC data, these toys have been associated with at least 51 cases of strangulation or near strangulation incidents since 1973, with 31 cases of death being reported. These deaths occurred when the infant's or young child's neck either became entangled in cord(s) attached to the toy or became entangled in its own clothing which caught on a crib toy horizontal cord or toy part.

Most of the victims were between six and twelve months old, and it should be noted that crib gyms pose a unique danger to infants over five months who, with the ability to push up on their hands and knees, have been known to strangle when they fell across the crib gym stretched across the crib.

Despite these deaths and injuries, there are currently no mandatory standards which regulate crib toys. It is MASSPIRG's

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opinion that the voluntary standard, ASTM F963-86, is not adequate to protect children from the strangulation hazards associated with crib toys such as those described above.

We believe that the voluntary standard is inadequate for several reasons:

1. The standard's 12" limit on cord length is not supported by current anthropometric data or by information concerning strangulation accidents;

2. Parents tend to ignore labeling caution to remove the crib gym when an infant is five months old because that is precisely the time when a child will start to use the toy;

3. Despite the fact that the CPSC has reports of strangulation deaths associated with crib mobiles, the labeling requirement does not apply to such mobiles;

4. Currently, the standard does not address the strangulations that occur when an infant's clothing becomes entangled on protrusions of a crib toy; and,

5. The current standard does not address entrapment hazards which may occur when an infant's head becomes entrapped in the opening formed by multiple cords of a crib toy, or by cords and a part of the crib toy.

Even with these flaws, manufacturers are not always complying with the voluntary standard. This is evidenced by the 1990 USPIRG finding that at least three crib gyms that were found on retailer's shelves do not comply with the current voluntary standard -- a standard that we believe needs to be strengthened. These crib gyms which violate the standard are: (1) Baby Exerciser by Battat Inc., (2) Sesame Street Crib and Play Pen Toy with Peek-a-Boo Mirror by Illco Toy Co. and (3) Baby Trainer by Ambi Toys. The latter was found by researchers in Massachusetts.

Since there is strong evidence of widespread noncompliance with the voluntary standard, MASSPIRG would urge the CPSC to do more than simply revise the voluntary standard. We would recommend the Commission issue a rule that includes all the requirements requested by the petition filed by the Consumer Federation of America and the New York State Attorney General's office. With crib toys continuing to pose safety hazards to infants and young children, it is clear that the CPSC should establish mandatory safety standards to end the needless deaths and injuries associated with these toys.

Thank you for your consideration.

Very truly yours,

Ellen S. Citron

Ellen S. Citron
Consumer Protection Program Director

CH 1-91-10

The Coalition For Consumer
Health & Safety

1424 16th Street, N.W.
Suite 604
Washington, D.C. 20036
(202) 387-6121

December 18, 1990

Chairman Jacqueline Jones-Smith
U.S. Consumer Product Safety Commission
5401 Westbard Avenue
Bethesda, MD 20207

RE: "Strangulation Hazards Associated With Crib Toys; Advanced Notice of Proposed Rulemaking," 55 Fed. Reg. 42402, October 19, 1990.

Dear Chairman Jones-Smith:

The Coalition for Consumer Health & Safety is pleased to submit comments on the Advance Notice of Proposed Rulemaking to address the risks of strangulation to children associated with crib toys. An organization of 36 insurance, consumer and health groups, the Coalition supports measures to reduce consumer deaths, injuries and illnesses.

In its comprehensive policy document, the "Consumer Health & Safety Agenda," the Coalition expressed its concern regarding the strangulation hazards posed by crib toys and concluded:

> "The Coalition supports the development of standards to ban crib toys that pose strangulation hazards. Current recommendations from manufacturers to discontinue use when a child reaches five months of age are inadequate since this is the age when the child first starts to enjoy use of the product, thereby causing parents and others to ignore the recommendation. The Coalition recommends better and more conspicuous warnings to inform consumers of the need to have crib dropsides in the upright position and to place the crib mattress in the lowest possible position."

In keeping with this position, we strongly urge the Commission to develop a proposed rule that would outlaw crib toys that pose a strangulation hazard to infants. We believe the following facts underscore the importance of such a rule.

o Crib toys have been associated with 51 strangulation or near-strangulation incidents since 1973. Of these, 31 infants died and there was one case of permanent severe brain damage.

o The current voluntary standard is inadequate to prevent the type of strangulation deaths and incidents that have occurred. For example, the provisions addressing cord length, labeling of crib toys intended to be strung across a crib, and the length of strings that can tangle to form a loop (around the child's head) are all inadequate.

o Since crib toys are played with in a crib, they are intended to be used without any adult supervision. Thus, it is imperative that crib toys not pose hazards to infants. The death and incident reports make it clear that infants have routinely maneuvered themselves or the crib toy into a position where they were unable to extricate themselves and could have or did strangle.

o The Commission's Directorate for Compliance and Administrative Litigation has taken 14 separate actions (from 1987 through February 1990) to address hazardous crib toys. These products did not comply with one or more of the provisions of the voluntary standard. We believe that the Commission must utilize its limited resources in a manner that provides adequate protection for consumers. Addressing hazardous crib toys on a case-by-case basis is not only inefficient, but it fails to protect public safety. Limited recall effectiveness allows millions of crib toys to remain in use, leaving millions of American infants exposed to the strangulation risk.

Thank you for your attention to these comments.

Sincerely,

Stephen Brobeck
Chairman

CH 1-91-11

Consumer Federation of America

Comments of

CONSUMER FEDERATION OF AMERICA

on the

Consumer Product Safety Commission's

Advance Notice of Proposed Rulemaking
on Strangulation Hazards Associated
with Crib Toys

55 Fed. Reg. 42402

Submitted by:

Mary Ellen R. Fise
Product Safety Director

December 18, 1990

1424 16th Street, N.W., Suite 604 • Washington, D.C. 20036 • (202) 387-6121

On behalf of our 240 state, local and national consumer organization members, Consumer Federation of America (CFA) is pleased to submit the following comments regarding the CPSC rulemaking on crib toys, as described in the Advance Notice of Proposed Rulemaking contained in the October 19, 1990 Federal Register (55 Fed. Reg. 42402).

CFA supports the Commission's initiation of rulemaking to address the suffocation hazards posed by crib toys intended to be attached to or near a crib or playpen for use by children younger than two years of age. We offer the following arguments in support of the need for CPSC promulgation of a mandatory rule regulating crib toys.

Crib Toys Pose an Unreasonable Risk of Injury to Infants

CPSC is aware of 51 incidents involving crib toys, including 31 deaths, one case of permanent severe brain damage, and 19 "near-misses." The majority of the victims were 6 to 12 months of age, within the age developmentally where experts and parents believe the child can obtain maximum enjoyment from the product (see expanded discussion below). Hence, these products fall squarely within the definition of sections 2(f)1(D) and 2(s) of the Federal Hazardous Substances Act and are appropriate for mandatory rulemaking under that law.

Consumer Use of Crib Toys Is Widespread

Crib toys are very popular products with parents. In one survey utilizing a consumer panel of 500 women, 53% of those surveyed considered crib toys as essential for their baby and 60% considered mobiles as essential. Other recent surveys of new mothers found that 79% had at least one crib mobile and 86% of new mothers had purchased a crib gym or received a crib gym as a gift. According to CPSC staff estimates, in the period between 1987 and July, 1990, approximately 7 million crib mobiles and 11 million crib gyms were acquired by consumers.

Consumers Have Mistaken Beliefs Regarding Safe Use of Crib Toys

It is clear from the CPSC data that consumers have not followed the instruction (where available) to remove the crib toy from the crib when the child begins to push up on hands and knees. A CFA survey conducted in summer 1990 confirmed that consumers do not know when to discontinue use of crib toys. This survey, measuring consumer competency, included a question on toys that are strung across a crib. In a multiple choice format, the question asked when such toys should be removed. Of the 205 consumers asked this question, only 24% responded correctly, when an infant "can push up on hands and knees." Thus, fewer respondents answered correctly than if they had simply guessed (25%). Responding incorrectly: 11% answered when an infant "no

longer shows an interest in them; "23% answered when an infant "can stand up;" and 42% answered when an infant "can grasp them."[1]/

Of those responding correctly, 19% were male and 31% were female. Interestingly, age, ethnicity, and income did not seem to affect greatly the respondent's ability to answer correctly. For example, 30% of respondents earning under $15,000 answered correctly, while 28% of respondents earning $50,000 and over answered correctly. We find it particularly alarming that 76% gave an answer that clearly was inappropriate (answers (A) no longer shows an interest in them; (C) can stand up; and (D) can grasp them). [2]/

Given the plethora of children's products and associated age recommendations, and the apparent lack of understanding of the strangulation hazard associated with crib toys, it is easy to

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[1] The question in the survey was posed in the following manner:

Toys that are strung across a crib should be removed when an infant

(A) no longer shows an interest in them
(B) can push up on hands and knees
(C) can stand up
(D) can grasp them

[2] Crib gyms are considered manipulative play toys and grasping is a manner of manipulating the toy. One advertisement for a crib gym describes the product as "a bright, sturdily built 13" long crib toy to stimulate grasping and pulling." (emphasis added) Since grasping first occurs around three months of age, we find the fact that consumers answered (D) particularly curious. If the product was removed at the onset of grasping, the product would have no play value at all. This leads us to speculate that this response may very well have been a guess.

understand the continued consumer confusion and mistaken beliefs surrounding this type product.

Crib Toys Are Intended to Be Used Without Adult Supervision

Unlike any other children's product, a crib is intended to be used without adult supervision. Hence, products expressly or impliedly marketed for crib use, similarly should be safe for use without adult supervision. Given that consumers historically have not followed age or ability recommendations for crib toys, it is imperative that these products be designed to perform in a manner that will not pose a strangulation risk to children up until two years of age. [3]/ CFA believes the CPSC rulemaking should specifically describe the performance characteristics in a manner as advocated by the CFA/NY Attorney General's office petition.

Crib Toys Are Developmentally Appropriate For Children Beyond the Age of Safe Use

Crib toys are unique in that they are generally placed in the crib at or before the baby's birth, yet the infant is not able to benefit or enjoy the product until about 3-4 months of age. While current crib toy labels instruct parents and others to remove the toy when the child is five months of age, child development experts, including those that developed the

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[3] Two years is the age at which manufacturers recommend that crib use be discontinued.

Commission's Age Guidelines for Toys, [4]/ contend that manipulative crib toys are most appropriate up until 12 months of age. This dissonance between the age the product can be appropriately used and enjoyed and the age the product can be used safely has contributed, we believe, to consumer use that ignores the current product warning labels.

The Voluntary Standard for Toys Does Not Adequately Address the Strangulation Hazard

As the petition and the CPSC Human Factors Evaluation both explain, the provisions addressing crib toys in the voluntary standard for toys [5]/ are inadequate to protect infants from the risk of strangulation. The standard fails to address adequately both string length and postural strangulation and is completely deficient in addressing other hazardous crib toy features, such as protrusions and pull rings.

Furthermore, compliance with the voluntary standard is entirely inadequate. In a period of three years and two months, CPSC has had to seek recall or other remedies for 14 hazardous crib toys, leading the Compliance staff to find that "there may be substantial nonconformance with the existing voluntary standard provision." [6]/

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[4] See, Guidelines for Relating Children's Ages to Toy Characteristics, Goodson and Bronson, report to CPSC, Contract No. CPSC-85-1089, October 17, 1985.

[5] ASTM Standard Consumer Safety Specification on TOY SAFETY, F 963-86.

[6] Memorandum from T. Rogers to E. Tyrrell, May 7, 1990.

In addition to the comments expressed above, CFA urges CPSC in this rulemaking to continue to address the seven categories of crib toys described the Federal Register notice. [7]/ We believe a strangulation hazard is associated with all of these products. Information on the type of toy involved in infant crib toy deaths and near-miss incidents reported to the Commission was available in 44 of the 51 incidents. The table below summarized the types of crib toys associated with the deaths, incidents and one case of severe brain damage.

CRIB TOYS INCIDENTS CATEGORIZED BY TYPE OF TOY

Type of Toy	Cases	Death	Brain Damage
Crib Gyms	28	14	1
Suspended Stuffed Toys	4	3	
Cord-Activated Toys	4	1	
Mobiles	5	4	
Activity Boxes	3	2	
Unknown	7	7	
TOTAL	51	31	1

[7] According to the ANPR, "The term "crib toy" includes, but is not limited to, all of the articles described below: crib gyms, crib mobiles, suspended stuffed toys, cord-activated toys, activity toys, crib music boxes, and crib mirrors." 55 Fed. Reg. 42404.

While CPSC does not have any incident or death data specifically referring to crib music boxes or crib mirrors, CFA believes that these products have similar, if not identical, design and performance characteristics as products such as mobiles and activity boxes and thereby present the same strangulation risk.

For example, one of the deaths on a mobile involved an eight-month old child who died when his clothing caught on a mobile attachment clamp. We know of one very popular mobile (by Fisher Price) that incorporates a crib music box as part of the attachment clamp. Parents have told us that they have removed the mobile portion of the product when their child was five months old or so, but left the music box clamp attached to the crib because their child had become accustomed to falling asleep to the sound of the lullaby played by the crib music box. This evidence directly corroborates the supposition posed in the CPSC staff report. [8]/ While it is impossible for us to determine whether the mobile attachment clamp associated with the death described above also incorporated a music box design, we believe that the rulemaking should address music boxes that pose a strangulation hazard if they have a clamp or other protruding device capable of catching a child's clothing or other article or if the music box requires a string that is six inches or greater to activate the music.

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[8] See "Human Factors Evaluation of Provisions Which Address Crib Toy Strangulations In The Toy Safety Voluntary Standards," S. Deppa, July 1987 at page 10 (hereafter referred to as Deppa).

A similar argument can be made for including crib mirrors in this rulemaking. Like activity boxes, that have been involved in three incidents, including two deaths, crib mirrors must be attached to the crib or playpen rails or sides so that the child can use the product. CPSC data include one incident of postural strangulation on a cord attaching a flexible activity box to a mesh-sided playpen. It is not clear from our reading of the CPSC report whether this case resulted in death. [9]/ We believe this type of incident warrants including crib mirrors in the rulemaking, particularly with respect to provisions on cord perimeter length and protrusions. Crib mirrors with protrusions or long cords pose a strangulation hazard. Similarly, crib mirrors that come with no means of attaching them to the crib or playpen offer the opportunity for strangulation since consumers, who are unaware of the strangulation hazard posed by cord attachment, may affix the mirror with a cord that permit a child's head to become entrapped or rest over the cord.

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[9] See Deppa, p.6.

CH1-11-12

Marcella V. Ridenour, Faculty, Temple University

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Wyncote, PA 19095

215-576-0928
215-787-1960
FAX 215-576-1669

December 1, 1990

Office of the Secretary
Consumer Product Safety Commission
Washington, DC 20207

Dear Secretary:

I have reviewed the CPSC ADVANCE NOTICE OF PROPOSED RULEMAKING ON CRIB TOYS and therefore I have the following comments with regard to the established risks of injury associated with cribs. The mandatory crib standard for full size cribs addresses and limits the size of toeholds on the sides and ends of cribs in order to reduce to frequency of children climbing out of cribs as follows:

> 1808.7 Construction and finishing
>
> (c) Crib end panels and sides or any attachment thereto shall have no horizontal bar, ledge, projection, or other surface accessible to a child inside the crib capable of being used as a toehold located less than 51 centimeters (20 inches) above the mattress support in its lowest position when the side rail is in its highest position, except the lower horizontal bar of the crib rail may have a vertical dimension that extends no higher than 7.6 centimeters (3 inches) above the mattress support in its lowest position. In no case will any gap between the top surface of the mattress support and the bottom of the lower horizontal rail be permitted. For the purposes of this paragraph, any ledge or projection with a depth dimension greater than 1 centimeter (3/8 inch) shall constitute a toe-hold.

It is foreseeable that the attachment of a crib toys may create a ledge or projection with a depth greater than 3/8 of an inch and therefore create a hazardous toe hold. Although the intention of the proposed rulemaking is limited to strangulation injuries and accidents, I would like to propose an additional part of the proposed standard to assure that the temporary or permanent attachment of the crib toy will not change the design or structure of the crib and therefore violate the previously published mandatory crib standard. The crib should continue to meet the all the sections of the mandatory crib standard after any crib toy has been attached.

Sincerely,

Marcella V. Ridenour

Marcella V. Ridenour

CH 1-91-13

JOLLY JUMPER INCORPORATED

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USA Outside of RI
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December 17, 1990

Sadye Dunn, Secretary
Consumer Product Safety Commission
Washington, D. C. 20207

Re: Proposed rulemaking by C. P. S. C. for crib toys

Dear Ms. Dunn:

Jolly Jumper wishes to have the following comments taken into consideration when making rules concerning crib toys:

1. The potential risk of injury associated with crib toys is virtually nonexistent. National Electronic Surveillance System (NEISS) statistics released by the Commission for the last five years show only one or two incidents associated with these products in each of the five years. This is less than the number of incidents associated with such articles as diapers and the two regulated categories of pacifiers and rattles.

2. The causes of injury in the data base for these products was compiled over a fifteen-year period between 1973 and 1987 and the incidents described were addressed by the toy industry when it promulgated its revision to its voluntary standard ASTM F963.86. Thus there is no need for a mandatory standard.

3. The 14 substantial hazard cases cited by the Commission as warranting crib toy regulation appear to involve toys manufactured before the effective date of the amendment and provide no basis for a crib toy proceeding.

4. Crib gyms, crib mobiles, suspended stuffed toys, cord activated toys and activity boxes are all addressed by the Voluntary Standard ASTM F963.86 and proposed amendments to that Standard.

Jolly Jumper has over the years sold hundreds of thousands of crib mobiles in the United States without any incident of injury.

5. Industry and the staff of the Commission have attempted to draft a requirement defining and prohibiting protrusion hazards for many years but have been unable to do so without prohibiting any toy that has more than one plane or even a corner, for example, a handgrip on an exercise gym, a pull ring attached to a cord, the facial features on a sculptured cartoon character would all have vertical protrusions.

6. Several members feel that the definition of crib toy should be limited to toys intended for children under the age of 18 months. The proposed Commission definition in the ANPR is very vague when it refers to "toys used near a crib".

7. The petition filed by the Consumer Federation of America (CFA) seeks to prohibit toys which span a crib unless they are rigid. While this proposal is not suggested as the basis for a rule by the CPSC, it does appear in the ANPR without a definition of the term rigid.

8. Some crib toys attach to headboards, some to rails and some do not attach to the crib at all. Apart from the fact that it is a good general safety suggestion, why should the toy warn to keep the mattress low and the rail high if the caution is not appropriate for the toy?

9. Any resulting proposed regulation should contain reproducible criteria and repeatable performance tests. The CFA petition may be well intentioned but it does not define with sufficient precision performance tests which are repeatable and which will provide objective criteria for any rule or regulation.

Your consideration for our thoughts on this matter are appreciated.

Very truly yours,

Robert Cockburn
President

RC/cw

CPI-11-14

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Bruce W. Main, B.S.E.

Publications
Karla J. Stoermer, B.A.

Administration
Anne Marie Lenz, B.B.A.

November 19, 1990

Office of the Secretary
Consumer Product Safety Commission
Washington, D.C. 20207

Re: Strangulation Hazards Associated with Crib Mobiles

Dear Secretary Dunn:

I write in response to the CPSC Advance Notice of Proposed Rulemaking on Crib Toys [55 FR 42404, October 19, 1990]. My comments concern the crib toy labeling proposed in the November 17, 1988 petition presented to the CPSC by the Consumer Federation of America and the New York State Attorney General's Office.

Basis for Comment on Proposed Warning Label

The following evaluation of the proposed warning label is based on my knowledge and training in the area of product instructions and warnings, my own research in this area, and experience designing and evaluating product safety information (see attached resume for more detailed information). I should note that I am not employed by nor do I represent any parties associated with the manufacture, distribution or sale of crib toys. I simply wish to share my knowledge concerning product warnings in an effort to prevent accidental injuries from the use of these products.

Response to Proposed Crib Mobile Warning

The petition cited in the October 19, 1990 notice for proposed rulemaking (see attached) calls for a warning to be placed on crib mobiles, crib mobile packaging and crib mobile instructions. The petition's warning is as follows:

Warning

Keep toy away from baby's reach.
Remove mobile and attachment clamp (and music box attachment, if applicable) when baby becomes 5 months of age or begins to push up on hands or knees.
Child could strangle if clothing, head, or neck gets caught on toy part.

After a preliminary review of this warning, I wish to submit the following comments and suggestions regarding the warning:

1. With regards to the content and wording of the warning, I question the extent to which "Keep toy away from baby's reach" provides sufficiently explicit instructions. In particular, how is "baby's reach" defined? Is it acceptable if the baby can touch the toy but not quite grasp it? Furthermore, how does one go about determining the "reach" of the baby? Should adults perform some type of test to make sure that the baby can't reach the toy? Can adults accurately estimate the reach envelop of a baby? Finally, to what extent does a baby's reach vary according to their clothing or the bedding placed in the crib? I suspect that answers to these questions might lead to different, and perhaps more detailed instructions on how to prevent accidental contact between the mobile and the baby. I would suggest that this instruction be empirically tested to determine parents' interpretation of this message and their ability to comply with it.

   The perception of the word "toy" may also be problematic. First of all, the the word "toy" is commonly associated with an object that is safe for children to play with. This is not a toy in the common sense of the word. Crib mobiles are not intended to be manipulated by children. Furthermore, it is possible that the word toy will not be interpreted to mean all pieces associated with the mobile. Thus, I suggest replacing "toy" with a more descriptive term that does not have an *a priori* positive connotation which is contrary to the intended message of the warning. (e.g., Make sure that your baby cannot touch any part of the mobile.)

2. Rearranging the order of the statements may also improve its effectiveness. Placing the nature of the hazard at the beginning of the label is likely to assist the reader in comprehending and appreciating the other text in the warning. For example, if the first statement on the warning is "Keep toy away from baby's reach", the reader may presume that ingestion of the suspended pieces is the primary hazard as opposed to strangulation, or that the baby's mouth could be cut by sharp pieces or protrusions, or the reader may think that the baby could break the mobile, or they may think that the worse thing that could happen was that the baby's arm could become tangled in the strings hanging from the mobile. These are actual interpretations from three young adult women who were told that this statement appears on crib mobiles. None of the women, including one who has work in day care centers for several years, interpreted this statement to have anything to do with strangulation. Reordering the statements would also make this warning more consistent with the Draft ANSI Z535.4 (1989) standard for product safety signs and labels.

   A final reason to reorder the information is that recent research (Frantz and Rhoades, 1990; Friedmann, 1988) concerning attention to and compliance with warning labels suggests that people may pay more attention to and have greater recall for the first messages presented on a label than the last messages. The reason for these results is not quite clear and they may vary according to the product in question. Nevertheless, if this trend occurs with the proposed crib mobile warning, then many people may not understand the true nature and severity of the risk associated with babies contacting the crib mobile even though they briefly attended to the warning. I suggest something along the lines of the following:

WARNING
Baby could be strangled to death if clothing, head or neck gets caught on any part of the mobile. Make sure that your baby cannot touch any part of the mobile. Remove the mobile, including all attachments, when the baby turns 5 months old OR when the baby can push up on hands or knees.

3. Regarding the location of the warning on the product's packaging, the petition requires that the warning be placed "conspicuously on the product." I would suggest that this specification be more explicit and require that the warning be placed on the front panel of the product's packaging so that consumers are exposed to the message prior to purchase. Such a location would promote informed purchase decisions.

   An additional warning label could be placed on the flap of the product's packaging so that the package could not be opened unless the consumer/installer removes it, or a warning label could be placed elsewhere on the product's packaging so that it physically obstructs the installer for a brief moment. This interruption strategy may be particularly effective in getting the mobile installed at a safe height. Some of my recent research indicates that warning messages which interfere with a person's routine are more likely to be noticed, read and heeded than those that do not interrupt the user. My understanding of the proposed crib mobile warning is that it does not contain this element of user interference.

   A final comment about warning location pertains to the presence of the warning at the beginning of the product's instructions. First of all, it may not be optimal to have the warning statement at the top of the instructions, outside of the other step-by-step information. Depending upon the particular layout of the instructions, users can be drawn immediately to the step-by-step instructions rather than read headings or anything else that does not appear directly relevant to the task at hand

(i.e., installing the mobile). Thus, there is a possibility that the warning message will be overlooked because it is not included in the set of installation procedures. Given this possibility, I would suggest that consideration be given to placing the warning message within the step-by-step installation instructions. Although I would hypothesize that including the warning message in the installation instructions would be more effective, experimental studies addressing this particular issue are lacking, and I would again suggest that a controlled study be conducted to resolve this issue.

In closing, I wish to emphasize the importance of systematically evaluating the impact of proposed warnings. Regarding the crib toy warnings, I urge you to evaluate the proposed labels along such criteria as noticeability, comprehensibility and behavioral compliance before issuing labeling requirements. If I can be of assistance in developing an evaluation methodology for proposed warnings, please let me know.

Sincerely,

J. Paul Frantz, M.S.E.

November 1, 1990

RESUME

Name: J. Paul Frantz
Address: 2232 Fuller Road Apt. 201
Ann Arbor, Michigan 48105

EDUCATION

M.S.E. Industrial and Operations Engineering, The University of Michigan, 1989

B.S.E. Human Factors Engineering, Wright State University, 1988

PROFESSIONAL SOCIETY MEMBERSHIPS

American Society of Safety Engineers
Human Factors Society
Institute of Industrial Engineers

WORK EXPERIENCE

Research Engineer, June 1988 - Present
J.M. Miller Engineering, Inc. Ann Arbor, Michigan

Projects involving product safety, occupational safety and other areas of human factors engineering/ergonomics. Design and evaluation of safety related communications such as instructions, warnings and product packaging. Analysis of accidents involving consumer products, industrial equipment and work sites, and other man-machine interfaces. Design of field studies and surveys to assess effectiveness of safety information and determine product usage patterns.

Industrial Engineer, June 1986 - September 1987
Mead Corporation, Products Division Cooperative Education Program, Dayton, Ohio

Work place and work methods design and modification; work measurement and standards implementation in several paper converting factories around the country.

PUBLICATIONS

Rhoades, T.P., Frantz, J.P., and Miller, J.M., Emerging Methodologies for the Assessment of Safety Related Product Communications. In the *Proceedings of the Human Factors Society Annual Meeting*, October 1990.

Miller, J.M., Lehto, M.R., and Frantz, J.P., *Instructions and Warnings: The Annotated Bibliography.* Fuller Technical Publications, 1990.

WORKING PAPERS

Frantz, J.P., Miller, J.M., and Lehto, M.R., Must the Context be Considered When Applying Generic Safety Symbols: A Case Study in Flammable Contact Adhesives. Submitted to *Journal of Safety Research*, September 1990.

Frantz, J.P. and Rhoades, T.P., The Affect of Warning Label Location and Task Interruption on Attention To and Compliance With Product Warnings. Working report on research conducted at the University of Michigan, Fall 1990.

CH1-94

Allegheny County Health Department

3333 FORBES AVENUE
PITTSBURGH, PENNSYLVANIA 15213
PHONE: 578-8026

December 18, 1990

Office of the Secretary
Consumer Product Safety Commission
Washington, D.C. 20207

Dear Sir/Madam:

On behalf of the Allegheny County Health Department, Pittsburgh, Pennsylvania, I would like to offer the following comments on the proposed CPSC regulation concerning strangulation hazards associated with crib toys. I commend the Commission for reviewing the voluntary safety standards that currently exist for crib toys. I respectfully recommend that to prevent the tragic and senseless death and injury that results each year from crib toys, the Commission promulgate a mandatory design standard for the manufacture of safe crib toys, ban the sale of unsafe crib toys (unsafe as defined in the petition of the Consumer Federation of America and the N.Y. State Attorney General's Office, dated November 17, 1988) (to prevent the sale of dangerous imports), and recall as well as order the destruction of unsafe crib toys (to prevent the international sale of unsafe toys that were recalled).

The need for a mandatory design standard is revealed by the Commission's own findings that it "has reason to believe that widespread nonconformance with the voluntary standard may exist" (hence the need for a mandatory standard), and that the "voluntary standards which are applicable to crib toys do not eliminate or adequately address risks of strangulation deaths and injuries associated with crib toys" (therefore, there is an imperative need that the Commission promulgate effective standards that are supported by current anthropometric data and by available information concerning the mechanisms involved in strangulation incidents).

A design standard, as opposed to a labeling requirement, is indicated because the labeling requirement stating, "Caution: To prevent possible entanglement injury remove toy when baby begins to push on hands and knees" is inadequate and ineffective. In addition to the Commission's concern that the caution will not be heeded by parents because their child obtains the maximum value of the toy at the age it becomes dangerous, there is also the concern that the warning will be forgotten because of the time between the installation of the toy (very possibly at birth) and the time at which it becomes dangerous

24-CS-0790

(about five months later) (note that this problem may not be solved by imprinting the warning directly on the toy because of the minimal value of the warning after the toy and its warning are seen on a daily basis by the parents) and the concern that an injury could occur before a caregiver realized that a baby had the ability to push on hands and knees.

Requiring the manufacture and sale of safe crib toys is desirable solely in terms of a humanistic and moral view, but such a requirement is also economically sound. Beyond the substantial social and emotional costs, the direct health care and rehabilitation costs involved in the lifetime care of a brain damaged infant are enormous as are the indirect costs of the lost potential productivity of that child.

The resources of this local health department stand ready to implement a meaningful program. Please call on me for continued support.

Sincerely,

Albert H. Brunwasser
Director

AHB:lld

CH1-91-16

AMERICAN SOCIETY OF SAFETY ENGINEERS

1800 East Oakton Street
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Judy T. Neal, CAE
Executive Director and Secretary

708 692.4121
FAX 708 296.3769

December 19, 1990

Office of the Secretary
Consumer Product Safety Commission
Washington, D.C. 20207

CPSC ANPR re Strangulation Hazards Associated with Crib Toys

Dear Sir/Madam:

The following comments by the American Society of Safety Engineers (ASSE) are submitted in response to the Notice in the Federal Register of Friday, October 19, 1990, requesting comments and information regarding the ANPR mentioned in caption.

First let me introduce myself as President of the American Society of Safety Engineers. The ASSE is a non-profit professional society founded in October, 1911, and is the oldest professional safety society in the United States. Our purpose was then - and still remains today - to promote the advancement of the safety profession, foster the professional well being and development of its members and the protection of people, property, and the environment.

There are 25,000 members of the Society working in industry, government, academia, insurance, and any number of other endeavors and enterprises. The individual expertise of the membership includes certified safety professionals, industrial hygienists, registered professional engineers, ergonomist/human factor scientists and other technical specialists with in the various sciences. These members are involved in the development and implementation of standards, methods, procedures, systems, and devices, for the purpose of reducing, controlling, or eliminating hazardous exposures. Our interests are those of professional practitioners whose charge is to protect our nation's resources.

An important part of the Society's mission is to support the development of effective safety and health standards to facilitate the identification of hazardous conditions and practices. From such standards hazard control methods, procedures, and programs are initiated to promote positive and pro-active safety and health techniques. An integral element of these techniques or programs is training and educational requirements which communicate the necessary hazard control and avoidance information. This methodology, when properly implemented, has the potential to effectively reduce our nation's injury and illness toll.

Using the above systematic approach or some of its components in addressing the hazards substantiated by the statistical data presented in the ANPR, the ASSE supports the need for regulatory action. However, in reviewing the options available to the Commission, the Society does not urge a mandatory rulemaking but prefers strengthening the existing voluntary standard F963-86 where design can eliminate these hazards. Although the standard has technical deficiencies, these issues can be addressed more effectively and efficiently in the areas of technology and administration respectively by the ASTM F15 Committee and its task force.

Working with the ASTM Committee and its panel of multi-interest experts, the Commission can assist the committee deliberations with human factors/anthropometric and hazard analysis data, including research and testing, if necessary. Such a partnership should be pursued to expedite the development of the standard and also to hold the F15 Committee to a reasonable completion schedule. Many of the methods offered by the Commission to expedite standards development can be utilized and perfected through the suggested working relationship.

While the Society first recommends a design resolution of these hazardous exposures, the labeling requirements must be stark and bold to stand out and communicate an understandable message. Joined to the labeling requirements in a system of communication should be the educational/public information factors in this equation. All of the factors must systematically fit together to remove the exposure of strangulation from the use of crib toys.

Thank you for your thoughtful consideration of ASSE's position. In any future deliberations please call upon me for additional information concerning the Society's view of this matter or contact William E. Phillips, Jr. at (202) 857-6373.

Sincerely,

R. Benjamin Rietze

R. Benjamin Rietze
President

RBR:sz

D:\wp50\gac\crib.dkt

CH-91-17

Dorothy A. Drago

Product Safety Consultant
204 East Deer Park Drive
Gaithersburg, Md. 20877
(301) 926-1002
fax: (301) 330-2409

Jan 8, 1991

Office of the Secretary
Consumer Product Safety Commission
Washington DC 20207

Dear Ms Dunn

I am responding to the ANPR on "Strangulation Hazards Associated with Crib Toys" appearing in the Federal Register Vol 55 No 203, dated Oct 19, 1990.

I realize that I am late in responding, however I wish to express my comments to whatever extent, if any, they may be considered.

1. The statement defining banned toys has three parts: it bans manipulative crib toys with a horizontal suspension member unless a) the horizontal member is rigid ....b) horizontal member has no vertical protrusions, and c) the toy is labeled "Always use both ends attached to opposite crib sides..... "

The use of the word "and" at the end means that all three items must be met in order for a crib toy to be "not banned". I agree that the horizontal member should be rigid, but to have no vertical protrusions would mean that nothing could be suspended from that horizontal bar. Perhaps "vertical and above the member" would be more accurate. To require the suggested label on a toy with a rigid member does not make sense because it is highly unlikely that a child could strangle on the unattached end of a rigid member. Perhaps this item was intended to be an "or" statement, as it would apply to toys with non-rigid horizontal members.

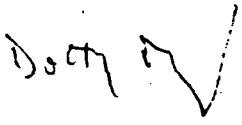
2. To ban toys with cords or other components that form a perimeter of more than 14 inches should be limited to "open circumferences", as this is what presents the hanging hazard. A four inch square (16 inch perimeter) with a figure in the center would be banned by the definition, yet would not pose the hazard addressed.

3. Why ban any crib toy with a pull ring attached to a chord? Why not just limit the size of the pull ring?

4. Why ban a mobile that can be located within the reach of a infant "not" able to push up on hands and knees? These infants are not at risk of strangulation on mobiles.

5. The warning proposed for mobiles is too age limiting at 5 months. Infants at risk are those who can bring themselves to a standing position. These are children older than 5 months--perhaps 7 to 8 months old. I suggest the warning be restated as " Keep out of baby's reach. Remove when baby is 8 mos old or can bring self to a standing position in crib. Child could strangle ....."

Sincerely,



Dorothy Drago

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UNITED STATES GOVERNMENT

MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

MAR 25 1993

TO : Celestine Trainor, EPHF

Through: Dr. Robert D. Verhalen, Associate Executive Director
Directorate for Epidemiology
Robert E. Frye, Director, EPHA

FROM : Suzanne P. Cassidy, EPHA (504-0470)
Debbie Tinsworth, EPHA (504-0470)

SUBJECT: Crib Toys - Data Update and Response to ANPR Comments on Strangulation Hazards

This memorandum provides updated data on deaths associated with manufactured crib toys. It also addresses specific public comments received in response to the October 1990 Advance Notice of Proposed Rulemaking (ANPR) to address strangulation hazards associated with crib toys.

Crib Toy Deaths

Between January 1973 and February 1993, 28 deaths involving crib toys were reported to the U.S. Consumer Product Safety Commission (CPSC).[1] This information was obtained from a review of the National Electronic Injury Surveillance System (NEISS), and CPSC's files of in-depth investigations, death certificates, medical examiners' and coroners' reports, consumer complaints, and other reported incidents.

These deaths reflect a net increase of one death since an August 1990 EPHA memorandum that cited 27 deaths with crib toys. A July 1990 fatality included in the August 1990 memorandum was later found to have involved a toy modified by the consumer. Therefore, the incident was deleted from the total count of deaths associated with manufactured crib toys. Reports of two additional fatalities were received since August 1990. One occurred in September 1989 when a 12-month-old infant was reported to have strangled after a ribbon-type strap of a crib toy became wrapped around her neck. An October 1992 death was said to have occurred when a 10-month-old child strangled after putting her head through a loop in a rope of a crib toy attached to a corner of her playpen. In neither case was the date of toy purchase available.

[1]This number excludes homemade items or products that were modified by the consumer.

Response to ANPR comments

Public comments received by CPSC in response to the 1990 ANPR on crib toys included two issues regarding the injury data. As discussed below, these related to the frequency of crib toy injuries reported through the NEISS system, and to the dates of the strangulation incidents relative to the April 1986 re-publication of the voluntary standard for toys.

Issue 1:

Commentors noted that in recent years, published National Electronic Injury Surveillance System (NEISS) statistics showed only one or two injuries per year associated with crib toys. They indicated that fewer incidents were reported for crib toys than for some regulated products such as pacifiers.

EPHA Response:

An evaluation of relative risk among crib toys and other children's products using only NEISS data would not be appropriate. Emergency room-treated injuries involving crib toys, such as those reported through NEISS, generally have not been strangulation-related. Most of the strangulation-related incidents reported to CPSC have either been fatal or have produced no injury, and have been reported through data sources other than NEISS.

Issue 2:

Commentors noted that most of the crib toy incidents reported to CPSC occurred before the April 1986 re-publication of the ASTM voluntary standard for toys. Thus, most of the known incidents would have been evaluated by representatives of the crib toy industry for the 1986 revision of the voluntary standard.

EPHA Response:

Most of the deaths either occurred before the re-publication of the standard, or the product involved was purchased before that date.[2] The majority of cases also have been reviewed by representatives of the crib toy industry. However, not all hazards appeared to have been addressed by the April 1986 revision (e.g., string length). It is possible that revisions currently under consideration may reduce some hazards not previously addressed.

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[2]Of the 28 deaths involving strangulation with crib toys, 5 occurred since April 1986 (3 in 1986, 1 in 1989, and 1 in 1992). In two of these cases, the product was purchased before 1986. In the remaining three cases, the age of the toy at the time of the incident was unknown.

F

CHARACTERISTICS OF CATCH POINT INCIDENTS CONTRIBUTING TO STRANGULATION ON CRIB TOYS AND OTHER CHILDREN'S PRODUCTS

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EXECUTIVE SUMMARY

Human Factors staff reviewed requirements intended to address catch points on other children's products, to determine how to eliminate hazardous catch points on crib toys. Since these requirements were developed on a product-by-product basis, and were based on limited data and judgment rather than objective criteria, inconsistencies exist among requirements as to which catch points are hazardous.

To provide objective criteria on which to base requirements for catch points, this report studied the characteristics of catch point incidents across several product types. This report analyzed incident data involving strangulation when something worn by a child became entangled on a catch point, such as a protrusion or gap, of a juvenile product. A total of 90 incidents were identified, involving cribs (47 cases), crib toys (12 cases), playground equipment (22 cases), and play yards (9 cases). Of these, 72 involved fatalities, 3 involved brain damage, and 15 involved other non-fatalities. These incidents occurred when items worn near children's necks became entangled on catch points on stationary children's products. When the victims lowered themselves, the caught items tightened around their necks. Victims ranged from 7 months through 9 years of age, with over three-fourths of the cases occurring to children under 2 years old.

Two types of catch points were identified, protrusions (77 cases) and gaps (13 cases). It was sometimes difficult to determine whether a protrusion, gap, or combination was at fault when a protrusion was located next to a gap. It is more likely to attribute an incident to a protrusion which is more obvious, than a gap which is often subtle. Protrusion orientation is more important than shape or size. Vertical protrusions were implicated two and one-half times as often as horizontal protrusions. Protrusions with and without enlarged ends were implicated in almost equal proportions. In addition, the shortest protrusion length (i.e., 0.25 inch) involved in catch point incidents appeared in both horizontal and vertical orientations. Other relevant factors included protrusion location relative to the corner or adjacent surface (i.e. creating a gap) of a product, and protrusion texture. Both clothing and non-clothing items worn by children became entangled on catch points. Most were string-like items, and many of these had enlarged ends that became caught in gaps.

The approach in developing objective criteria on which to base requirements for catch points by studying incident data across several product types has merit. While some of these products have different intended users, this does not affect which protrusions or gaps are capable of entangling something

worn by a child. The characteristics of victims, catch points, and items worn by children that became caught, may be useful in addressing comments received on the crib toy Advance Notice of Proposed Rulemaking (ANPR). These characteristics can also provide information to the voluntary standards subcommittees for toys, cribs, playground equipment, and play yards.

This information may provide a preliminary basis for developing requirements for addressing catch points. Protrusions and gaps that can entangle items worn by children can be addressed. Strings on some items worn by children that can become entangled on catch points might be replaced by nylon tape closure fasteners or modified by eliminating enlarged ends on strings.

I. BACKGROUND

In 1990, the U.S. Consumer Product Safety Commission (CPSC) published an Advance Notice of Proposed Rulemaking (ANPR) on crib toys. The ANPR begins a rulemaking proceeding which may result in issuing requirements to address strangulation hazards associated with crib toys. Crib toys are toys intended to be attached to or near a crib or play yard for children younger than 2 years of age. These toys include, but are not limited to, crib gyms, suspended stuffed toys, cord-activated toys, mobiles, activity boxes, crib music boxes, and crib mirrors. As used in this context, the term "strangulation" means asphyxiation due to occlusion of respiration and/or circulation by external compression of the neck.

CPSC has received reports of strangulation incidents associated with crib toys. One way strangulation occurred was when items worn by children, such as clothing or pacifier cords, became entangled on catch points of crib toys. In the early 1980's, after becoming aware of two deaths when infants' clothing became caught on crib gym protrusions, CPSC staff suggested revising the toy safety voluntary standard to include a labeling provision. The ASTM F963-92 Consumer Safety Specification on Toy Safety now contains a provision to label crib gyms with cords "From birth to 5 months. CAUTION: To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees." The rationale was that removing crib gyms before children can reach them would prevent entanglement.

To determine whether this label is likely to address strangulation on catch points of crib gyms, as well as other crib toys, Human Factors (HF) staff reviewed the technical literature on label effectiveness and applied the factors from the literature to the crib gym label.

A. **Review of Label Effectiveness Literature**

Label effectiveness is defined by whether people will change their behavior in response to the information on the label. A review of the technical literature on labeling effectiveness indicated that most state-of-the-art knowledge on label effectiveness is based on laboratory studies.[1] These studies cover a wide variety of consumer products and experimental tasks. Many of these used behavioral compliance measures such as whether subjects took some precautionary action in using a product. Other effectiveness-related measures included: ratings of perceived effectiveness, perceived risk and compliance likelihood; warning detection, reading time/rate and recall; and warning need/expectation and accident scenario generation.

These studies report wide variations in effectiveness--between 0 and 100 percent. The variations in effectiveness can be explained by differences in the products containing the labels. The primary factors which influence effectiveness are the perceived hazardousness of the product, the person's familiarity with the product, and the cost of compliance with the warning. These factors explain why some people do not notice labels, many who notice labels do not read them, and of those who read them, many fail to take recommended precautions.[2] For example, in a behavioral study of liquid drain opener and wood cleaner use, 88% of the people noticed the label, 46% read the label, and 27% followed it.[3]

Noticed/Read - Strong and consistent data show that the likelihood of noticing a label increases as the perceived hazardousness of a product increases. Familiarity with a product or similar product tends to decrease perceived hazardousness. One literature review cites 12 studies showing impact of product hazardousness and familiarity findings on effectiveness of labels.[4] Another literature review explained these findings by the theories of information seeking and filtering.[5] Information on familiar situations and familiar products is likely to be filtered out since people not looking for information are unlikely to notice it.

Motivated to Comply - Perceived hazardousness also plays a major role in whether once people read a warning, they will act upon it. This is especially true for the perceived likelihood of being injured.[6,7] Again, familiarity affects whether the label will motivate people to comply. Studies have shown that prior experience contrary to the label which did not lead to an incident, may strongly reinforce the prior behavior and lower the perceived risk. If the behavior requested on the label conflicts with this experience, it may not adequately motivate.[8] For example, in a study on All Terrain Vehicles, the efficacy of labels warning against use with passengers varied as a function of prior passenger experience.[9] In addition, other studies found that the cost of compliance also determined when people would follow labels. The higher the cost of compliance in terms of time and effort, the less effective the label. For example, in a study of labels on broken doors instructing to use other doors, either adjacent or some distance away, people did not follow the label for the high-cost condition (door some distance away), but did follow the label for the low-cost condition (door adjacent).[10] Label instructions that are one-time actions are less costly in time and effort than instructions that must be followed repeatedly.

According to the technical literature, it may be unreasonable to expect high levels of effectiveness from product safety labels.[11] Injury control measures are often discussed on the passive-active continuum. Passive measures involve no

conscious effort by the user, while active measures require changes in behavior. While labels can be useful, they are not as effective as measures which do not rely on changing behavior.

B. **Application of Technical Literature**

The Human Factors staff applied the factors from the technical literature on label effectiveness to the crib gym label. The biggest weakness with the crib gym label is not whether it will be initially noticed and read when the product is first installed in a crib. At that point, the instruction on the label is not applicable. A catch point on a crib gym does not become accessible until several months after the product is in use, assuming a crib toy is purchased and installed when the baby is born.

Once the catch point becomes accessible, the label is not likely to be noticed, read, or complied with. After several months of use, the product is familiar, as the parent sees the product several times a day, when taking a child in and out of the crib. The label is unlikely to be noticed or read since at that point parents will not be looking for information. This familiarity will also lower the perceived hazardousness of the product, as prior experience with the product did not lead to an incident. In addition, strangulation is usually an all or nothing hazard. There is usually no warning of a "near-miss" to alert people to the hazard.

Further, it is questionable whether parents understand the hazard. The label uses the term "entanglement injury" to cover all scenarios of entanglement. Some consumers may not understand the meaning of "entanglement" as it is not an everyday word. Those consumers who do understand the meaning of "entanglement" may visualize a child becoming caught in strings or straps of a crib gym. The fact that the strings, etc. are worn by children and may become caught on the crib gym is not at all apparent from the label.

In addition, the label is not likely to be complied with as instructions on the label contradict a consumer's knowledge of when children can play with the toy. Therefore, following the instruction results in a high cost of compliance, as the product would only be useful for a few months. Crib gyms and other crib toys (except mobiles) are intended to be manipulated by the child as evidenced by the toys' characteristics and names. These toys often contain easy-to-grasp parts which produce sound or motion, such as pull rings which activate music boxes or rotate figures.

The names "gym," "exerciser," and "kicker," imply that manipulation is intended to enhance motor ability; for example, kicking moveable parts to develop stronger leg muscles, or using easy-to-grasp parts to help pull up to a sitting or standing position. Infants around 3 months of age begin to reach, grasp, shake, and pull, to create simple effects.[12]

Children's interest in manipulative crib toys declines by about 12 months of age. By this age, thumb apposition is complete and children become capable of more complex fine motor skills.[13] In addition, as children's gross motor skills develop, such as standing, climbing, and walking, parents may remove crib gyms, both to make room for the child to move about the crib, and to prevent a child from using the crib gym as a toehold to climb out of the crib. Therefore, manipulative crib toys are most appropriate for children from 3 through 12 months of age.

There is an inconsistency about the label in the toy safety voluntary standard which limits the use of manipulative toys to children less than 5 months of age. Since a child cannot manipulate the toy until 3 months of age, the toy would only be useful to the child for 2 months. Further, since the child development literature indicates that children from 3 through 12 months of age obtain the maximum benefit from the toy, it is unlikely that parents would follow the label and remove the toy just when a child begins to play with it. Rather, eliminating catch points on crib gyms as well as other crib toys would be more likely to address the strangulation hazard.

Mobiles are the only type of crib toy for which this label may have some validity as the label does not contradict the intended use of these toys. These toys are not intended for manipulation as they primarily provide visual stimulation.[14] Mobiles are most appropriate for infants in the first 6 months of life who cannot yet explore objects with hands, feet, and mouth, to help them focus on and follow objects with their eyes. Once infants can reach and grasp objects, they are less interested in toys they cannot touch and manipulate. Therefore, mobiles are intended for children less than 6 months old.

Since mobiles are the only type of crib toy not intended for manipulation, they are the only crib toys designed to be hung out of reach of children. In this context, "out of reach" depends on both the age of the child, as gross motor skills change dramatically during the first year of life, and on the height adjustment of the crib mattress. Since "out of reach" changes as the child grows older, toys containing a permanent label on both the packaging and the product may reduce the likelihood of strangulation.

Mobiles hung out of reach cannot present a strangulation hazard. However, it is foreseeable that some people may continue to leave mobiles in the crib after the child is 5 months of age, even with a label on the product. A musical mobile is likely to be one of the child's first toys, since it requires no manipulative skill. A child may become accustomed to being soothed to sleep by the mobile's music. Then, even though the child becomes older and interested in other toys, the music may still be used to soothe him/her at bedtime. Further, in addition to play value, some people will view a mobile as a nursery decoration to be left in the room, even if the child appears to lose interest in it. Many soft goods manufacturers make mobiles in patterns to match crib bedding, such as sheets, bumper pads, comforters, and mattress ruffles. The mobile, in a sense, fulfills the parent's desire to have a pretty room, rather than the child's need for a toy. Eliminating catch points on mobiles, in the event a child can reach the toy, would better address the strangulation hazard than the sole use of a label.

Labeling is unlikely to be effective in addressing strangulation on catch points of crib toys, except possibly for mobiles.

C. Other Products With Catch Points

To determine how to eliminate catch points on crib toys, HF staff reviewed requirements intended to address catch points on other children's products. The strangulation pattern involving catch points, such as protrusions and gaps, is not unique to crib toys. Other products on which strangulation occurred when items worn by children became entangled on catch points include cribs (corner post extensions and hardware), playground equipment (slide transition areas and swing hardware), and play yards (fasteners).

Efforts by the CPSC staff and manufacturers of cribs, crib toys, play yards, and playground equipment, to develop requirements to address hazardous protrusions and gaps, have taken different approaches:

Cribs

A 1982 CPSC staff review of the Commission's incident data revealed that fatalities occurred when infant's clothing or items around their necks became entangled on decorative extensions on crib corner posts. Staff requested the Juvenile Products Manufacturers Association (JPMA) to develop requirements for a voluntary standard addressing entanglement/strangulation on crib corner post extensions. In 1985, ASTM issued ASTM F966-85, Consumer Safety Specification for Full-size and Non-full-size Baby Crib Corner Post Extensions, which limited the length of

corner post extensions on cribs to 0.59 inch. This dimension was based on incident data and judgment. In 1991, after a death occurred on a crib corner post that complied with this standard, the voluntary standard was revised to limit the lengths of corner post extensions on cribs to 0.06 inch. The stated dimension for the revised limit is to allow slight differences between the length of the corner post and adjacent portions of the crib due to wood shrinkage or swelling caused by humidity/temperature changes. There are no provisions in the standard to address other crib catch points.

Playground Equipment

The CPSC Handbook for Public Playground Safety, originally published in 1981 and revised in 1991, contains recommendations that limit the length of protrusions. However, the rationale for these recommendations is based partially on penetration of the eye socket rather than on entanglement with clothing, and partially on judgment. These recommendations use three annular test gauges placed sequentially over a protrusion. If a protrusion can enter the hole in any test gauge and penetrate beyond the face of the gauge, (a depth more than one-half of the gauges' diameter), the protrusion is considered hazardous. The gauges allow protrusions to be up to 1.5 inches in length, depending on diameter. The gauges do not test protrusions more than 3 inches in diameter.

A draft ASTM voluntary standard for public playground equipment uses the same three protrusion test gauges. However, it contains a more stringent protrusion test gauge for vertical protrusions and for protrusions extending perpendicular from the initial surface on slide transition and chute areas. In the current draft, this gauge limits the projection of these protrusions to 0.12 inch. Like the three gauges in the CPSC Handbook, this protrusion gauge is based on judgment. This standard also contains a requirement, although no performance criteria, that slides have no gaps that might create an entanglement hazard.

A draft revision of an ASTM voluntary standard for home playground equipment uses a variation on the three gauges in the CPSC Handbook. For most protrusions, the gauges do not test protrusions more than 1.5 inches in diameter. Again, this standard has more stringent requirements for upright protrusions than for other protrusions. The current draft specifies testing upright protrusions up to 3 inches in diameter and allows up to 1.5 inch projections. This standard has a further requirement that no protrusion may terminate in a dimension greater than that of the base dimension. This is intended to eliminate protrusions with enlarged ends.

Play Yards

The ASTM F406-89 Standard Consumer Safety Specification for Play Yards includes a provision that addresses entanglement of buttons on children's clothing in the mesh, by limiting the size of the mesh openings. This is out of scope of this paper. It does not contain other requirements addressing catch points.

II. OBJECTIVE OF THIS REPORT

This report studied the characteristics of catch point incidents across several product types in order to provide objective criteria on which to base requirements for catch points. The purpose of this report is to identify characteristics of victims, catch points, and items worn by children that became caught, which contributed to the incidents.

Current requirements intended to address catch points are for the most part based on judgment rather than objective criteria. Inconsistencies exist between requirements as to which catch points are hazardous. For example, these requirements limit the lengths of vertical protrusions to 0.06 inch for cribs, 0.12 inch for public playground equipment, and 1.5 inches for home playground equipment. Catch points considered hazardous for one product would be considered safe for another product. In addition, catch points on products that have been involved in strangulation incidents would pass other product requirements. For example, some crib corner post extensions involved in strangulation incidents would not be judged hazardous if subjected to the test using the home playground equipment protrusion gauges. While some of these products have different intended users, this does not affect which protrusions or gaps are capable of entangling something worn by a child.

III. ANALYSIS OF INCIDENT DATA

To identify characteristics of victims, catch points, and items worn by children that became caught, which contributed to strangulation, a key word search was performed of the CPSC incident data. The goal was to identify cases where something worn by a child became entangled with a children's product. Data bases searched included the NEISS (National Electronic Injury Surveillance System), IPII (Injury or Potential Injury Incidents, containing primarily consumer complaints, Medical Examiner and Corner Reports (MECAP), and newspaper clippings), DTHS (Death Certificate Project File), and INDP (In-depth Investigations). These incidents were received from July 1973 though October 1990. Incidents from sources other than NEISS are not a statistical sample nor do they include all the incidents that occurred. However, they do show how something worn by a child became entangled on a catch point of a children's product.

A total of 90 incidents were identified, of which 72 involved fatalities (F), 3 involved brain damage (BD), and 15 involved non-fatalities (NF). These included catch points on crib toys, cribs, playground equipment, and play yards.

These incidents occurred when items worn near children's necks became entangled on catch points on stationary children's products. When the victims lowered themselves, the caught items tightened around their necks. The ages of victims ranged from 7 months through 9 years of age. The victims' motor and cognitive skills were such that they could not remove themselves from the situation. Children generally use three of the products unattended, at least for a short while. Older children who do not require as much supervision generally use the fourth product, playground equipment. For the fatalities, there must have been a lack of direct visual contact for at least 5 minutes as the cutting off of air prevents vocalization by the victim and it takes about 5 minutes for death to occur.

A common misconception is that children cannot strangle if their body weight is supported. In fact, infants can die when items worn around their necks become entangled in catch points, though most of their body weight is supported. This is because obstruction of the airway may not be a prerequisite for death. Strangulation can occur in any of the following ways: blockage of the airway by elevation of the base of the tongue against the pharynx, compression of the jugular veins (veins leading from the head), or occlusion of the carotid arteries (arteries leading to the head).[15,16] The amount of force required for death is very small: hanging can occur from virtually any position, including positions where the feet or knees are supported by a surface and the entire body weight is not involved; and compression of the jugular veins in the neck requires as little as 2 kg (4.4 lb) of force[17], less than one third the weight of a 50th percentile 5-month-old infant.[18]

The incident data occurred on the following:

Cribs - 47 (39 F, 2 BD, 6 NF)

Corner post extensions	- 27
Adjustment knobs	- 3
Drop side guide rods	- 2
Miscellaneous locations	- 9
Unknown locations	- 6

Crib Toys - 12 (8 F, 4 NF)

Crib gyms	- 8
Mobiles	- 2
Activity box	- 1
Cord-activated toy	- 1

Playground Equipment - 22 (17 F, 5 NF)

Slide transition areas	- 15
Swing hardware	- 4
Climbers	- 2
Miscellaneous	- 1

Play yards - 9 (8 F, 1 BD)

Fasteners	- 7
Miscellaneous	- 2

Cribs were involved in just over half of the cases, playground equipment in almost a quarter of the cases, and crib toys and play yards each were close to an eighth of the cases.

Hindering this analysis was the lack of complete information in the incident data on locations, types, orientations, sizes, and shapes of catch points, and on the characteristics of items worn by children that became entangled. When data were provided, the characteristics of the ages of victims, catch points, and items worn by children that became caught, were as follows:

A. **Ages of Victims**

The victims ranged from 7 months through 9 years of age. Over three-fourths of the cases occurred to children under 2 years old.

As expected, the ages of victims varied for the different products:

Age of Child In Years	Total	Cribs	Crib Toys	Playground Equipment	Play Yards
TOTAL	90	47	12	22	9
< 1	24	11	7	0	6
1	45	33	5	4	3
2	5	2	0	3	0
3	6	0	0	6	0
4	0	0	0	0	0
5	1	0	0	1	0
6	4	0	0	4	0
> 6	4	0	0	4	0
Unknown	1	1	0	0	0

Fatalities occurred in four-fifths of the cases. The proportion of fatalities to total incidents for each age group held fairly constant.

Age of Child in Years	Total	Fatality	Brain Damage	Non Fatality
TOTAL	90	72	3	15
< 1	24	20	0	4
1	45	39	3	3
2	5	1	0	4
3	6	5	0	1
4	0	0	0	0
5	1	1	0	0
6	4	3	0	1
> 6	4	3	0	1
Unknown	1	0	0	1

During the first year of life, children's gross motor skills change dramatically.[19] Before 5 months of age, infants are unable to lift their bodies off the mattress, except to hold the head and chest off the mattress for a few seconds while on the stomach. Around 5 months of age, infants begin to push on hands and draw up knees while on the stomach. Around 7 months they begin to raise to a sitting position, and to pull themselves to a standing position, using objects for support. At this age, most children cannot get down from standing by themselves. They will generally continue to hold and vocalize until either someone helps them down or they fall down. At approximately 9 months of age, children begin to walk while moving their hands along furniture for support and can lower themselves to a sitting position from a standing position. By 12 months of age, children can stand by flexing their knees and pushing up from a squat position.

It is not until about 24 months, that children are steady on their feet and can quickly alternate between sitting and standing.[20] Thus before 24 months of age, children who have become entangled are generally not yet capable of getting their feet back under them and standing up again. They do not have the motor skills to stand up and relieve the pressure of their weight from their clothing.

Therefore, children in the age range of 7- to 24-months are most at risk for entanglement and strangulation, as they have the motor skills to raise to a sitting and a standing position. Once entangled, children in this age range do not have the cognitive ability, balance and strength to right themselves and remove themselves from the hazard.

Playground equipment incidents are occurring to older children. By 4 years of age, children's motor coordination is much better than their younger counterparts. However, these children use products in unorthodox ways and enjoy activities that momentarily threaten their balance. They still have

immature judgment and cannot yet foresee the consequences of their actions.[21] Entanglement incidents on playground equipment start to decline by age 7.

B. **Catch Points**

While this report started to study only protrusion cases, it became clear that some cases, originally attributed to protrusions, were actually gaps. Thus, there were two main types of catch points - protrusions and gaps:

> Protrusion - An extension on a stationary product over which an item worn by a child became hooked, thus surrounding or covering the protrusion.
>
> Gap - An opening in a stationary product between two surfaces in which an item worn by child became wedged, and was thus surrounded by the gap.

In some incidents, it was clear on what type of catch point the item worn by a child became caught. In other cases, it was difficult to determine whether it was the protrusion, the gap, or a combination of the two at fault. In a combination case, a protrusion was located next to a gap. An item worn by a child caught on the protrusion, and when the child moved to a lower position, the item became wedged in the gap. In addition, some cases may not have reported the catch points accurately. In the panic to free a child from hanging, a parent may have not noticed the exact location that caught an item around a child's neck. When reflecting on it later, the parent may be more likely to attribute the incident to a protrusion which is more obvious than a gap which is often very subtle.

Protrusions

There were 77 protrusion cases, which included:

Cribs - 45 (37 F, 2 BD, 6 NF)

- Corner post extensions - 27
- Adjustment knobs - 3
- Drop side guide bars - 2
- Miscellaneous locations - 7
- Unknown locations - 6

Crib Toys - 10 (6 F, 4 NF)

- Crib gyms - 8
- Miscellaneous - 2

Playground Equipment - 13 (11 F, 2 NF)

- Slide transition areas - 7
- Swing hardware - 4
- Climbers - 2

Play Yards - 9 (8 F, 1 BD)

- Fasteners - 7
- Miscellaneous - 2

It was difficult to classify protrusions by orientation, shape, and size. Often the data did not provide enough detail. In addition, to classify protrusions by orientation, shape, or size, these characteristics must be first defined and their relative importance determined.

1. Definition and Importance of Protrusion Characteristics

Protrusion orientation was defined as the direction that the protrusion projected from the surrounding product. (See Figures 1 and 2.) Orientation was classified as either vertical, horizontal, rotating, or unknown. For example, on cribs, corner posts were considered vertical and side rail adjustment knobs with horizontal shafts ending in cylindrical knobs were horizontal. The rotating orientation was exhibited on two crib gyms with protrusions that could rotate 360 degrees around a horizontal axis.

Protrusion shape was first defined by whether the end of the protrusion was enlarged or not. One theory was that enlarged ends would be more hazardous because an item, once entangled, would have a more difficult time slipping off the enlarged end. Within the enlarged or non-enlarged end category, protrusion shape was more finely classified. These classifications were

difficult because it was not just shape that was important, but how that shape interacted with items worn by children. For example, hooks on crib side rail guide rods, swings, and mobiles were classified differently, depending on how clothing entangled on the hook. Hooks were classified as rectangular when they formed an upside down "U", so the three closed sides entangled something worn by a child. Other hooks were classified as cylindrical when the end of the hook pointed upwards. (See Figures 3, 4, and 5.)

Protrusion size was classified by length and by either diameter for spherical or cylindrical protrusions, or by width and depth for other protrusion shapes. Length described the distance the protrusion projected from the surrounding product. Width was the longest remaining dimension and depth the shortest dimension. For example, on a crib corner post extension, length was the distance the corner post protruded from the headboard, width paralleled the headboard, and depth paralleled the side rail. Measurements of a fraction of an inch were converted to decimals for ease of comparing one measurement with another. Identifying the sizes of protrusions that can entangle items worn by a child requires a strategy. Obviously thin protrusions of adequate length can be catch points. At some point, items worn by children would slip off protrusions too short in length, or could not slip over and surround protrusions too wide in width or diameter. Therefore, the data were evaluated using the shortest length and the widest width or diameter. The data often did not provide all measurements of protrusions.

There were several factors that could affect what size protrusions could catch items of clothing:

One factor with vertical protrusions was the location at the corner of a product, such as a corner post of a crib, as many of the children were hanging outside the crib. (See Figure 1.) Vertical protrusions near the corner of a product may be shorter and still present a catch point because children have better leverage to climb out at the corner rather than in the middle. Therefore, a corner vertical protrusion is more likely to be encountered by a child attempting to get out.

Another factor that could affect what size protrusions could catch items of clothing was location of the protrusion next to another part of the product. (See Figure 3.) The gap formed between the protrusion and product may have also wedged something that was around a child's neck. For example:

> In two incidents, the rounded end cap outside the play yard top rail was reported to have caught an item worn by a child, the underarm of a dress and a pacifier string, and the child was found inside the play yard. While these were reported as protrusion cases, it is difficult to visualize

how these items could catch on such a small rounded protrusion. One case stated that the parents had to tear the dress to free the child. The other case stated that fibers from the pacifier cord were found wedged between the nut and the top rail. Therefore, it appears that the item worn by the child might have initially caught on the protrusion while the child was standing, and when the child sat down, the item became wedged in the gap.

If these short protrusions had been flush with the surface, so no gap existed, they may have been less likely to catch and hold items worn by children.

The texture of the ends on horizontal protrusions, such as the thread ends of bolts, may be another factor. The rough threads may help to hold items worn by children that become caught. For example,

> In a play yard case, the consumer had covered a replacement bolt which extended 0.63 inch beyond the play yard top rail with both cloth adhesive tape as well as paper masking tape. The covered bolt caught an arm hole of a shirt, resulting in death. The texture of the bolt could still be felt through the layers of tape.

If these short ends were smooth, they may be less likely to catch and hold items worn by children.

It was difficult to determine whether protrusion orientation, shape, or size most contributed to strangulation. For example, if shape was the most significant factor, then spheres on shafts, such as corner post knobs and crib gym spokes, would be classified together. The data indicated that orientation was more important than shape or size. Vertical protrusions were implicated two and one-half times as often as horizontal protrusions. Protrusions with and without enlarged ends were implicated in almost equal proportions:

Orientation of Protrusions by Shape

Orientation	Totals	Enlarged Ends	No Enlarged Ends	Unknown Ends
Totals	77	27	24	26
Vertical	37	18	17	2
Horizontal	15	7	7	1
Rotating	2	2	0	0
Unknown	23	0	0	23

While there were many unknowns, there is no reason to expect that they were occurring in any different pattern than the knowns. In addition, the shortest protrusions occurred on both horizontal and vertical orientations.

2. Vertical Protrusions

Most of the vertical protrusions were crib corner post extensions, with or without enlarged ends. There were two vertical protrusions whose end shapes were unknown, and both were crib corner posts.

a) Enlarged Ends

The shape of all but one of the enlarged ends on vertical protrusions was a sphere. These protrusions were crib corner post knobs. Most children who became caught on these protrusions were hanging outside the crib. When measurements were provided, these protrusions varied from 2 to 4.75 inches in length, and ranged from 1.5 to 4 inches in diameter. The other protrusion was a latch on a crib gym strap that encircled the crib side rail from the top and fastened from underneath.

b) No Enlarged Ends

There were two shapes within the category of vertical protrusions without enlarged ends, rectangular and cylindrical. The rectangular shapes were larger than the cylindrical shapes.

Rectangular-shaped vertical protrusions included nine corner posts, seven on cribs and two on playground slide handrails. In addition, there were four upside-down "U" shapes - two crib drop side guide rods, one home playground trapeze swing hook, and one playground slide handrail. Three hooks were located next to other surfaces of the product, and thus may have been combination protrusion/gaps. The lengths of the crib corner posts, when measurements were provided, were mostly in the 0.25 to 1 inch range. Though these protrusions were smaller in length than crib corner posts with knobs, the children were evenly divided between those hanging inside and those hanging outside the crib. While the widths of the rectangular protrusions, for both corner posts and upside down "U's" were often not provided, they appeared from the photographs to be about 1 to 2 inches wide. The corner posts would have larger depths than the upside down "U" shapes, appearing from the photographs to be about 1.25 versus 0.25 inches.

Cylindrical-shaped vertical protrusions included three thread-ends of bolts on playground equipment attaching components at the top of horizontal members and one hook from a mobile whose end pointed upwards. From the photographs, the lengths of these ends appeared to be about 0.5 inch and the diameters about 0.25 inch.

3. Horizontal Protrusions

Horizontal protrusions were reportedly involved less often than vertical protrusions. Most horizontal protrusions were bolts and knobs. The one unknown end was a bolt, but it was unclear which end of the bolt entangled something worn by the child.

a) Enlarged Ends

Horizontal protrusions with enlarged ends included three crib adjustment knobs, two near the top of the side rail and one below the side rail which adjusted the length of the legs on a crib/play yard combination. Other protrusions included a crib activity box knob, a play yard rivet, a crib wing nut and a playground climber rung. The shapes of the enlarged ends were generally cylindrical. The sizes of protrusions in this group were diverse. When measurements were provided, they ranged from 0.38 to 9.5 inches long and from 0.5 to 1.5 inches in diameter.

b) No Enlarged Ends

Horizontal protrusions without enlarged ends included fasteners on play yards (four), playground equipment (two) and cribs (one). Five were the thread-ends of bolts. They were cylindrical in shape and protruded from 0.38 to 2 inches. The diameters of these bolts were not provided. These bolts had threads that provided a rough surface. In the other two cases the protrusion was a smooth round end cap over a bolt on a play yard. In one case, the cap protruded 0.25 inch and was 0.19 inch in diameter. These cases may have been combination protrusion/gap cases, as they were located next to other surfaces. These cases also demonstrate that protective end caps over bolts may not be adequate to eliminate the catch point hazard.

4. Rotating Protrusions

There were two protrusions with rotating orientations. Both protrusions were crib gym spokes with spherical enlarged ends that were 2 inches in diameter and 4.5 inches long. In one case, the enlarged end was compressible.

5. Unknown Orientations and Shapes

There were 23 cases where the orientation and shape of the protrusion could not be determined: five on crib toys, 12 on cribs, three on play yards, and three on playground equipment.

6. Size

The size of protrusions which can entangle items worn by a child is determined by the shortest length and the widest width or diameter. Dimensional data were often not complete in the cases, especially for width or diameter.

The shortest length was 0.25 inch. Four protrusions were of this length - one crib corner post extension, one toddler slide handrail corner post, one playground ladder bolt, and one play yard end cap on a bolt. The first three were vertical protrusions without enlarged ends and the last one was a horizontal protrusion without an enlarged end. There were also three protrusions almost as small, 0.38 inch - one crib gym latch, one crib activity toy knob, and one play yard bolt. Of these, one was a vertical protrusion with an enlarged end, one was a horizontal protrusion with an enlarged end, and one a horizontal protrusion without an enlarged end.

At the other extreme, there were insufficient data to determine with certainty the widest width or diameter of protrusions that entangled items worn by children. Out of 17 cases where data were provided, one case purported to occur on a 4-inch diameter crib corner post knob, two cases on 3-inch diameter corner post knobs, and two cases on 2-inch diameter crib gym knobs. These were enlarged ends, either on vertical protrusions or rotating protrusions.

Gaps

There were 13 gap cases, which included:

Cribs - 2 (2 F)

Crib Toys - 2 (2 F)

Playground Equipment - 9 (6 F, 3 NF)

Gap between slide canopy/chute -	3
Gap between slide handrail and side of chute -	3
Gap between slide steps and chute -	2
Miscellaneous -	1

It was very difficult to detect gaps, and even more difficult to quantify their sizes and shapes. In over half the gap cases, an enlarged end on an item worn by a child became caught in the gap. These included knots, beads, and plastic spring clips on the ends of hood and pacifier strings, plastic handles at the end of a jump rope, a thicker lace trim at the end of a linen collar, and a canteen on the end of a strap. The thinner material may have slid into the entrance of the gap, and as the child fell, forcing the material into the gap, the enlarged end could not slide out through the gap. (See Figure 3.) For example:

> In three cases, items with enlarged ends worn by children became caught in the gap between the sides of the slide chute and the adjacent bottom edge of a canopy over the slide chute. When the child was at the top of the slide, the string may have caught at the entrance to the gap, and as the child tried to slide down the chute, the larger end could not slide out through the gap.

Gaps could not be classified by orientation, shape, or size. When measurements were given, they ranged from 0.13 - 0.25 inch wide.

C. Items Worn by Children That Became Caught

The items worn by children near their necks that became entangled on catch points included both clothing and non-clothing. Clothing accounted for three-fifths of the cases. Tops, that is, clothing with a neck hole, arm holes, and open at the bottom, were involved in two-fifths of all objects worn by children that became caught. Tops included shirts, sweaters, sweat shirts, pajama tops, night shirts, nightgowns, dresses, and jackets. One-piece outfits included sleepers and jump suits. When specified, tops and one-piece outfits became caught on straps of sleeveless outfits, in the neck area, under the arms, back, buttonhole, sleeve, and on protruding collars. Sweat shirts and jackets with hoods and hood strings became caught by either the hood itself or the string. Scarves were also involved. Miscellaneous clothing included mittens on a string around the neck and clothing not specified.

In many cases, a child was found with one arm out of the outfit. There were several possible explanations for this. The force being applied to the outfit by a child hanging may have pulled the arm out of the outfit. Alternatively, victims may have been trying to free themselves. Another explanation was

that children may have partially undressed themselves before the incident occurred, as a few cases stated that the child had begun to undress in the past. In any case, with one arm free, there is more clothing that can wrap around the neck, increasing the likelihood of strangulation.

Non-clothing accounted for two-fifths of the cases. The largest category, pacifier cords, accounted for one-fifth of all items worn by children that became caught. Bibs with straps in the back were also involved. Necklaces included toy necklaces and real necklaces. The "Toys for neck" category included toys, such as a guitar, canteen, and binoculars, on straps intended to be placed around the neck. Miscellaneous non-clothing included a dog leash, jump rope, arm sling, rattles on a string attached to a bib, and a blanket.

Parents placed some non-clothing items, such as pacifier cords and real necklaces, around a child's neck. In other cases, children placed items, such as a dog leash, jump rope, guitar, canteen, or toy necklace, around their own necks.

Item Worn by Child	Total	Fatality	Brain Damage	Non-Fatality
TOTALS	90	72	3	15
CLOTHING TOTALS	55	42	3	10
Tops	36	29	3	4
One-Piece Outfits	4	2	0	2
Hoods	4	4	0	0
Hood String	7	5	0	2
Scarves	2	1	0	1
Miscellaneous or unknown	2	1	0	1
NON-CLOTHING TOTALS	35	30	0	5
Pacifier Cords	18	17	0	1
Bibs	5	5	0	0
Necklaces	4	3	0	1
Toys for neck	3	2	0	1
Miscellaneous	5	3	0	2

Item Worn by Child	Total	Crib	Crib Toy	Playground Equipment	Play Yard
TOTALS	90	47	12	22	9
CLOTHING TOTAL	55	29	5	16	5
Tops	36	23	2	6	5
One-Piece Outfits	4	3	1	0	0
Hoods	4	0	1	3	0
Hood String	7	3	0	4	0
Scarves	2	0	0	2	0
Miscellaneous	2	0	1	1	0
NON-CLOTHING TOTAL	35	18	7	6	4
Pacifier Cords	18	13	2	0	3
Bibs	5	1	3	1	0
Necklaces	4	2	1	1	0
Toys for neck	3	0	0	2	1
Miscellaneous	5	2	1	2	0

Shapes of most items worn by children that became caught were of two types:

String-like Items had lengths much longer than their widths and depths. This group included most items worn by children that became caught, such as pacifier cords, hood strings, bibs, necklaces, toys for neck, mitten string, and straps on clothing.

Several string-like items had enlarged ends that became caught in gaps. These ends included items such as knots and beads on the ends of hood and pacifier strings, plastic handles on the end of a jump rope, and a canteen strung on a strap.

The string-like items also could be described by size. In 14 cases, the length and/or width of the string-like items were either specified or the width could be approximated by the width of the mark on the neck noted in the autopsy report. The lengths ranged from 10 to 48 inches, with the average being about 24 inches. While there was overlap, in general, pacifier strings and necklaces were at the lower range, 10 to 30 inches. The toys intended for the neck, a hood string, and the jump rope were at the higher range, 24 to 48 inches. The widths ranged from 0.1 to 0.5 inch, with the average being 0.23 inch.

The string-like items, especially pacifier strings, varied in the description of type of material. When specified, they were described as strings, cords, shoe strings, ribbons, nylon, and yarn.

Non-String-Like Items had lengths and widths that were more equal in size than string-like items. The depths of these items were small. This group included the hood, neck, back, under arm, button hole, sleeve, and protruding collar of clothing and a blanket. This group was more difficult to describe by size and shape because of its diversity.

There was no clear pattern between what types of catch points caught the string-like or non-string like items. Both types of items were caught on protrusions and in gaps.

Knowing the characteristics of items worn by children may be important for two reasons. First, knowing the size and shape of the items that became entangled on catch points may assist in developing performance requirements to eliminate hazardous catch points. For example, protrusions and gaps may be tested by determining whether the smallest diameter string can become entangled.

Second, strings on some items worn by children that can become entangled on catch points can be replaced by nylon tape closure fasteners or modified by eliminating enlarged ends on strings. For example, hood strings and firmly-attached strings on toys intended to be placed around the neck could be modified by use of nylon tape closure fasteners. Alternatively, enlarged ends, such as knots and beads on the ends of hood strings, could be eliminated.

Some attempts to eliminate strings have already been undertaken or are in process. In 1976, Great Britain issued the Children's Clothing (Hood Cords) Regulations which require "the hood of a child's outer garment shall not be designed to be secured by means of a cord drawn through the material." In 1978, CPSC issued Part 1511, Requirements for Pacifiers which prohibits pacifiers from being sold with strings. In addition, this mandatory standard requires that pacifier packaging be labeled with the statement: "Warning - Do Not Tie Pacifier Around Child's Neck as it Presents a Strangulation Danger." In 1992, prompted by new incidents which occurred when jacket hood strings became entangled on playground slides, the CPSC Hazard Screening Project members began evaluating available data on entanglements.[22] The ASTM Home Playground Equipment Subcommittee Chairman wrote CPSC in support of such a project.[23]

IV. CONCLUSION

To provide objective criteria on which to base requirements for catch points, this report studied the characteristics of catch point incidents across several product types.

Hindering this analysis was the lack of complete information in the incident data on locations, types, orientations, sizes, and shapes of catch points, and on the characteristics of items worn by children that became entangled. Now that the characteristics contributing to strangulation have been defined, revising the CPSC Investigative Guidelines could result in the reporting of more complete information on new incidents. For example, this may assure that future investigations contain more complete information on protrusion orientation, shape, and all size dimensions, and on location, length, width, shape, and material of items worn by children.

While this report started to study only protrusion cases, it became clear that some cases, originally attributed to protrusions, were actually gaps. It is very difficult to detect gaps, and even more difficult to quantify their sizes and shapes. However, it is becoming increasingly important to do so, as strangulations are continuing to occur on gaps. For example, since a search of data was done for this paper in 1990, CPSC is aware of at least five deaths which occurred on gaps of playground equipment slides.

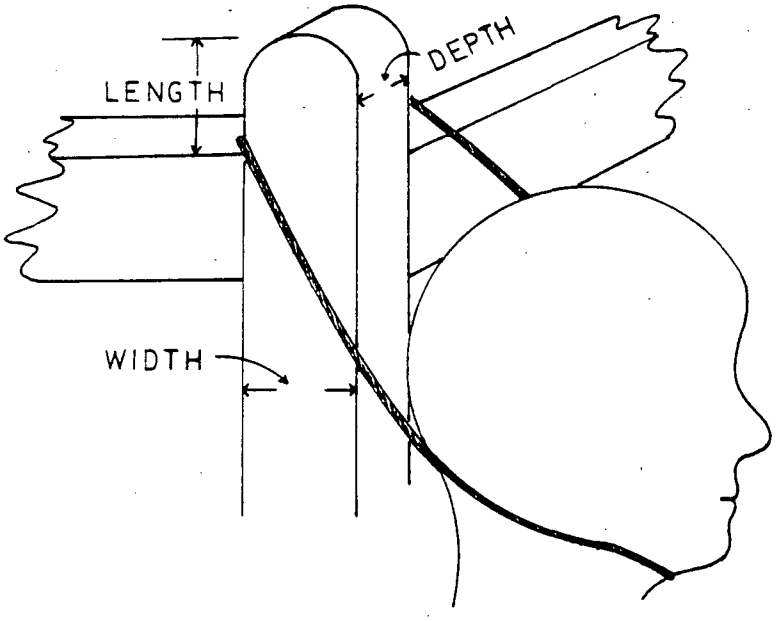
The approach of developing objective criteria on which to base requirements for catch points by studying incident data across several product types has merit. While some of these products have different intended users, this does not affect which protrusions or gaps are capable of entangling something worn by a child. Characteristics of victims, catch points, and items worn by children that became caught, were identified. These characteristics can be useful in addressing comments received on the crib toy ANPR. They can also provide information to the voluntary standards subcommittees for toys, cribs, playground equipment, and play yards.

This information may provide a preliminary basis for developing requirements for addressing catch points. Protrusions and gaps that can entangle items worn by children can be addressed. Strings on some items worn by children that can become entangled on catch points can be replaced by nylon tape closure fasteners or modified by eliminating enlarged ends on strings.

DEFINITION OF PROTRUSION ORIENTATION AND SIZE

FIGURE 1

VERTICAL ORIENTATION

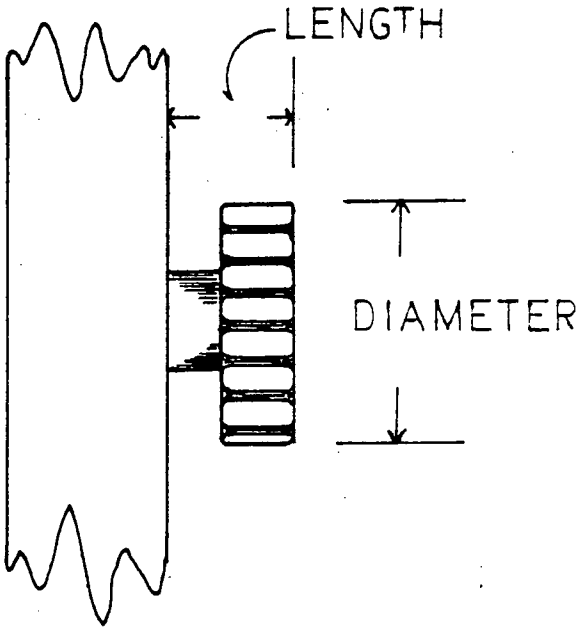


Crib corner post extension

Illustrates how protrusion, located at corner of product, can entangle something worn by a child.

FIGURE 2

HORIZONTAL ORIENTATION



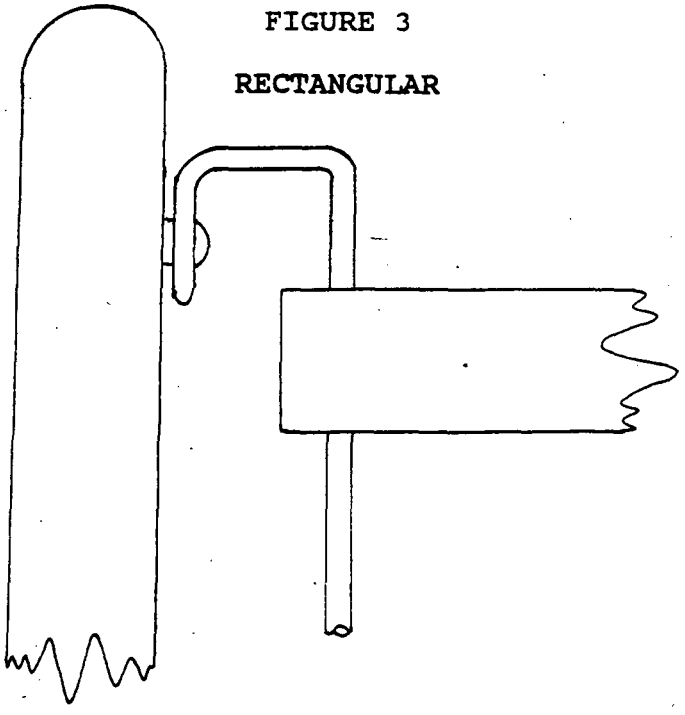
Crib side rail adjustment knob (enlarged end)

Illustrates how protrusion, located next to another part of product, creates a gap.

EXAMPLES OF HOOK SHAPES

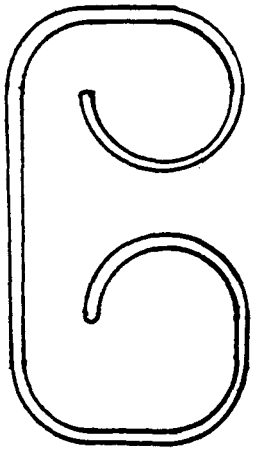
FIGURE 3

RECTANGULAR



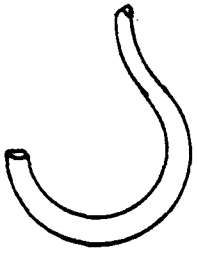
Crib side rail guide rod
and an example of a gap

FIGURE 4
RECTANGULAR



Home playground equipment
trapeze swing hook

FIGURE 5
CYLINDRICAL



Mobile music
box hook

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U.S. CONSUMER PRODUCT SAFETY COMMISSION

WASHINGTON, D.C. 20207

17 FEB 1993

Mr. Charles A. Brooks
Director of Product Integrity
Fisher-Price, Inc.
636 Girard Avenue
East Aurora, NY 14052

Dear Mr. Brooks:

At the November 18, 1992, meeting of ASTM Subcommittee F15.22 for Toy Safety, there was discussion regarding reducing the maximum length requirement for a flexible string or cord attached at one end to a crib or playpen toy. At that meeting CPSC staff was requested to provide a recommendation for the maximum length together with supporting rationale. Following is the staff recommendation.

Anthropometric tables of infant's body dimensions show that the circumference of the neck of a 5th percentile child in the age range 0-3 months is 7.2 inches (see enclosure). Staff believes that a flexible string or cord attached at one end to a toy will not present an entanglement/strangulation hazard if its length is insufficient to completely encircle the neck.

Therefore, the staff recommends that the length requirement for strings and cords on crib and playpen toys at 4.13.1 of the voluntary standard for toy safety, ASTM F963, be reduced to seven inches.

Please note that this staff recommendation has not been reviewed or approved by the Commission and should, therefore, not be regarded as an official position of the Commission.

Sincerely,

John D. Preston
Mechanical Engineering Division
Directorate for Engineering Sciences

Enclosure

UMTRI-86-2

SIZE AND SHAPE OF THE HEAD AND NECK FROM BIRTH TO FOUR YEARS

January 1986

Final Report to:
The Consumer Product Safety Commission
5401 Westbard Avenue
Washington, D.C. 20207

Neck Circumference (in)

(Males and Females)

Ages (mo)	N	Mean	S.D.	Min	5th	50th	95th	Max
0-3	30	8.4	0.8	7.2	7.2	8.3	9.7	10.5
4-6	30	8.4	0.4	7.6	7.6	8.3	9.2	9.6
7-9	30	8.6	0.8	7.4	7.4	8.4	9.7	10.7
10-12	30	8.6	0.5	7.3	7.3	8.7	9.4	9.4
13-18	30	8.6	0.5	7.3	7.3	8.7	9.3	9.4
19-24	30	8.8	0.5	8.1	8.1	8.7	9.4	10.0
25-30	31	9.0	0.6	7.9	8.0	8.9	9.8	10.6
31-36	30	9.0	0.5	8.1	8.1	9.0	9.7	10.4
37-42	30	9.1	0.4	8.0	8.0	9.2	9.8	9.8
43-48	30	9.5	0.5	8.7	8.7	9.5	10.2	10.2

UNITED STATES GOVERNMENT

MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

19 APR 1993

TO : Celestine Trainor, Project Manager, Crib Toys

Through: Dr. Robert D. Verhalen, AED, Epidemiology
Through: Warren J. Prunella, AED, Economic Analysis

FROM : Anthony C. Homan, ECPA

SUBJECT: Crib Toys -- Regulatory Discussion

On August 16, 1990, the Commission voted to grant the petition from Consumer Federation of America and the New York State Attorney General's Office (HP 89-1) requesting the Commission to issue a rule banning certain crib gyms, crib mobiles and other crib toys described in that petition. The Commission directed the staff to prepare an Advance Notice of Proposed Rulemaking (ANPR) to begin the rulemaking proceeding requested by the petitioner. The Commission issued this ANPR in October of 1990.

The staff is recommending that the Commission not publish a Notice of Proposed Rulemaking (NPR) for crib toys. The current ASTM voluntary standard F963-91 is now under revision and is likely to address many of the issues proposed in the ANPR. If no rulemaking is proposed, the Commission is not required to publish a final regulatory analysis under the Federal Hazardous Substances Act (FHSA), the Regulatory Flexibility Act (RFA), and the National Environmental Policy Act.

For the purpose of this report, crib toys are articles which are intended to be attached to or near a crib or playpen for use by children younger than 2 years of age. The term "crib toy" includes all of the following articles: crib gyms; crib mobiles; suspended stuffed toys; cord activated toys; activity toys; crib music boxes; and crib mirrors.

In a June 1991 market sketch, the Directorate for Economic Analysis reported 74 firms manufacturing, distributing, or importing infant toys. Most of these firms also manufactured or imported crib toys. Four firms accounted for 75 percent of the crib toy market. Annual unit sales of crib toys were estimated in the range of 10-25 million with a retail value of $100-750 million. The number of crib toys available for use was estimated as at least 50 million units.

In a March 1993 memorandum, the Directorate for Epidemiology reported that between January 1973 and February 1993 there were 28 deaths involving crib toys which were reported to the Commission. Five of these deaths, or .625 deaths per year, occurred since an April 1986 revision to the voluntary standard.

Emergency room-treated injuries involving crib toys, such as those reported through the National Electronic Injury Surveillance System (NEISS), have not been strangulation incidents. Most of the strangulation incidents reported to CPSC have either been fatal or have produced no injury; these have been reported through data sources other than the NEISS.

It is reasonable to assume that some strangulation incidents in cribs would occur even if crib toys, per se, were banned because less safe, substitute products would be used in cribs. Thus, eliminating certain crib toys might reduce incidents, but it would also shift some of these incidents to other products.

In deciding on a recommendation not to publish an NPR, staff considered the difficulty in being able to define the products and incidents that would be included under each of the petitioner's ban requests. Without reasonably being able to define the products and incidents subject to a rule, the description of any potential benefits and costs of a rule is not possible.

UNITED STATES GOVERNMENT

MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON,D.C. 20207

JUN 15 1993

TO : Jacqueline Elder, Director, EPHF

Through: Dr. Robert D. Verhalen, Associate Executive Director
Directorate for Epidemiology

FROM : Celestine M. Trainor, EPHF, 504-0468

SUBJECT: Response to ANPR Comments for Crib Toys

The purpose of this memorandum is to respond to the human factors issues raised in the Advance Notice of Proposed Rulemaking (ANPR) on Crib Toys. The Commission received 17 comments on the ANPR. The ANPR listed eight "Ban Requests"; each of which will be referred to by number. (The numbers were assigned in the ANPR and are listed in Table I.) Written comments are referred to by the commentor's number as assigned by the Office of the Secretary (Table II).

1. Comment

The definition of crib toys may broadly be interpreted to include products other than those capable of producing a risk of strangulation. Clarification of the term "crib toy" is needed. [Commentors #3, #5, #6, #13]

Response

The definition of crib toy as stated in the ANPR reads:

> "Crib toys are articles which are intended to be attached to or near a crib or playpen for use by children younger than two years of age."

This definition encompasses a variety of toys, but in all cases, the toys referenced are intended to be "attached to or [attached] near a crib or playpen." This does not include toys that may be placed freely in the crib or playpen. However, the ASTM toy safety voluntary standard does address any toy used in a crib or playpen.

The age reference of 2 years was chosen because the victims ranged in age from 1 month to 2 years.

2. Comment on Ban Request #1, part (a)

Define "rigid and attached at or above height of crib side rails". Instead of saying "rigid member at or above" say "attached to the crib rail with no portion of the member, excluding attached accessories, extending lower than 'x' inches below the projected line formed by the rail tops." [#1]

Rigid horizontal members may create new hazards not addressed, such as a pull-up bar or "step device" to climb out of the crib. [#3, #6, #13]

Response

Staff surmises that a rigid member at or above the height of the crib side rail would not be any more likely to be a "step device" to get out of the crib than the crib rail. However, staff is concerned that if the toy is securely fastened to the sides, any hanging items may be a means of helping the child try to climb out. Staff is also concerned with a head entrapment potential if the toy is installed close to the head or foot of the crib, creating an opening large enough for a child to get his head through and then become entrapped. Staff recommends that toys intended to be strung across a crib or playpen continue to be labeled for removal when child becomes 5 months of age or when pushing up on hands and knees.

3. Comments on Ban Request #1, part (b)

Define vertical protrusion? Does this mean vertically up, down, or both? Is string a vertical protrusion? Can a rigid member be sculptured or must it be straight? Would formed animals figures appended above a horizontal member constitute protrusions? [#1, #6, #17]

Response

Vertical protrusion refers to any projection that is level with or above the main horizontal suspension member. Since a string would not hang level with or above the main horizontal suspension member, it would not be considered a vertical protrusion.

A rigid member may be sculptured as long as there are no protrusions that could catch a child's clothing.

Animal figures appended above a horizontal member may constitute a protrusion.

4. Comment on Ban Request #1, part (c)

The proposed design and labeling changes for crib gyms are internally inconsistent and might actually increase the risks of injury associated with this product. If a rigid bar is left in the crib after 5 months, a child may use it as a step device to get out of the crib. Recommend leaving labeling intact. [#6]

Crib toys are developmentally appropriate for children beyond the age of safe use: between 3 and 12 months; yet told to remove at 5 months, thus warnings are ignored. [#11]

Labeling is inadequate and ineffective. Will not be heeded because child's interest is peak at time of removal and also warning may be forgotten between time of installation and time for removal. [#15]

Response

Staff agrees that design and labeling changes are internally inconsistent when discussing toys intended to be strung across the crib or playpen. However, there does not appear to be an adequate technical fix to address all the issues. Any toy that is strung across the crib or playpen may potentially create a hazard when the child is pushing up on hands and knees.

Toys that are intended to be attached to the side of the crib or playpen may not create the same hazards as those intended to be strung across the crib or playpen and, therefore, may not need to be labeled or removed at 5 months.

5. Comment on Ban Request #2

In what position would the product have to be in order to determine if a vertical string existed? [#3]

Response

When the toy is installed in the crib or playpen as directed in the installation instructions, a vertical string is considered to be any string hanging down from the toy. The string may or may not have something attached to the end. The string length restriction is intended to address all strings and cords on all crib toys.

6. Comment on Ban Request #2

Voluntary standard, ASTM F963-86, is inadequate because 12" string length is not supported by current anthropometric data. [#4, #7, #9, #10, #11]

Response

Staff agrees. Anthropometric data show that the circumference of the neck of a 5th percentile child in the age range 0-3 months is 7.2 inches. Staff recommends a string length requirement of less than 7 inches.

7. Comment on Ban Request #3

The current Toy Safety Voluntary Standard F963-86 does not address entrapment hazards formed by multiple cords, or by cords and part of the toy. [#4, #9, #10]

The Toy Safety Voluntary Standard F963-86 prohibits stuffed toys suspended by two or more cords that converge above the toy. [#6]

Response

The current voluntary standard does not address the entrapment hazard formed by multiple cords in conjunction with part of the toy. The issue being addressed with this ban request does not simply apply to two or more cords converging above the toy. A perimeter greater than 14 inches can be created by multiple cords in conjunction with the toy. While the cords may not "tangle" to form a perimeter greater than 14 inches, an opening may be created in which a child's head could fit through and then become entrapped.

8. Comment on Ban Request #4

Define protrusion. [#1, #3, #6, #13]

The voluntary standard, ASTM F963-86, is inadequate because it does not address protrusions. [#4, #7, #9, #11]

Suggest a design guideline for protrusions or catch points be added to ASTM F963-86 standard for toy safety. [#5]

Response

As addressed in the Human Factors' paper, "Characteristics of Catch Point Incidents Contributing to Strangulation on Crib Toys and Other Children's Products," (Deppa, October 1992) staff has not been able to define a protrusion so as to distinguish between hazardous and non-hazardous protrusions. The Design Guidelines offered by Commentor #5 may be helpful to manufacturers and designers in addressing this hazard. However, specific requirements and regulations to address this issue are not feasible at this time.

9. Comment on Ban Request #5

The current Toy Safety Voluntary Standard F963-86 does not address pull rings. [#7, #11]

Limit size of pull ring, don't ban pull rings attached to cords. [#17]

Response

There has been one reported death since 1973 involving a pull ring. Staff is not aware of other data to support a ban on pull rings. The hazard may actually be better addressed by limiting the length of the pull cord so that it cannot wrap around a child's neck.

10. Comment on Ban Request #6

What age can infant push up on hands & knees? How high can an infant, who cannot push up, reach? [#1]

Mobiles within reach of infants "not" able to push up on hands and knees are not a risk. [#17]

Response

Staff is not aware of data to support a ban on mobiles that are within reach of infants who are "not" able to push up on hands and knees. The children at risk are the ones who are able to push up on hands and knees and get entangled in the hanging items or caught on the attachment mechanism holding the mobile to the crib. Most children are able to push up on hands and knees around 5 months of age.

11. Comment on Ban Request #7

Mobiles are not "toys." The label should read: "THIS IS NOT A TOY AND IS NOT INTENDED FOR USE AS A TOY. Keep mobile away from baby's reach. Remove mobile and attachment clamp and music box attachment, if applicable, when baby begins to push up on hands and knees or is able to reach the mobile when the crib mattress is in the highest position." [#2]

"Toy" commonly means item for children to play with. Mobiles are not intended to be manipulated by children. Suggest changing the label to read, "Make sure that your baby cannot touch any part of the mobile." [#14]

Response

Mobiles are intended for the enjoyment and amusement of children and therefore, still fall under the heading of "toy". While manufacturers may not consider mobiles a "toy," the label is attached to the item in question and, therefore, consumers are not likely to be confused by the use of the word "toy". Either word is acceptable.

12. Comment on Ban Request #7

The voluntary standard, ASTM F963-86, is inadequate because there is no labeling for mobiles. [#4, #9]

The voluntary standard ASTM F963-86 is currently under revision and specific labeling requirements for the product, packaging and instructions for mobiles are proposed. [#6, #8]

Response

Staff is aware of proposed labeling requirements for the product, packaging, and instructions for mobiles within the Toy Safety Voluntary Standard. This proposed labeling conveys the entanglement hazard associated with mobiles and is similar to the labeling recommended in the ANPR.

13. Comment on Ban Request #7

Removal of mobile and attachment music box is too restrictive. Some mobiles are designed so the music box can stay in the crib after the mobile has been removed. [#5]

Response

The reason for recommending removal of mobile and attachment clamp (and music box attachment, if applicable) is to address the entanglement hazard with the "strings" of the hanging items, and hazardous protrusions on the clamps. Since it is not possible at this time to determine what constitutes a hazardous protrusion, the music box attachment alone can be viewed along the same lines as other crib toy activity boxes which are fastened to the side of the crib or playpen. If the music box is designed with the Design Guidelines as guidance, protrusion hazards are likely to be minimized. Therefore, requiring removal of the music box attachment along with mobile, if it is possible to separate the mobile, is not necessary.

14. Comment on Ban Request #7

Define "reach" as it applies to the label for mobiles. Does it mean touch but not grasp? What tests determine distance?

Rearrange order of statements:

WARNING

Baby could be strangled to death if clothing, head or neck gets caught on any part of the mobile.

Make sure that your baby cannot touch any part of the mobile.

Remove the mobile, including all attachments, when the baby turns 5 months old OR when the baby can push up on hands or knees. [#14]

Response

The potential for a hazard is not so much when a baby can "touch" the mobile, but when he is able to grasp it and become entangled in it. Simply stating "Keep away from baby's reach" conveys the message. No tests are possible because the consumer must monitor the baby's growth and activity to determine when the mobile is within reach.

15. Comment on Ban Request #7

Be more explicit regarding the location of the warning on the packaging: "on front panel of product's packaging" not just "conspicuously on the product". Informed purchase decisions are promoted when the warning is on the packaging not just the product.

Place warning on flap of product so it must be seen before it can be opened.

Place warning message within the step-by-step installation instructions, not at the top of the information package because it may be overlooked at the top when the installer looks directly to the step-by-step instructions. [#14]

Response

The ban request says the label should appear clearly and conspicuously on both the product and its packaging.

For most manufacturers the front panel is the most conspicuous location on the packaging. Requiring the label to be in a specific location may lessen its noticability on some packages.

The ban request does not say the warning should be at the "top" of the information package, but that it should be the "1st item in the instructions" which could mean the step-by-step installation instructions or the information package. Research is available which supports both positions.

16. Comment on Ban Request #7

Label for mobile is too restrictive, children at risk are 7 to 8 months, when they pull to a stand, not 5 months. Change label to state "Keep out of baby's reach. Remove when baby is 8 months old or can bring self to a standing position in crib. Child could strangle..." [#17]

Response

Children who can pull themselves to a stand are more at risk for entanglement or strangulation with mobiles. However, in order to have consistency with labeling of toys that pose a potential entanglement or strangulation risk to children moving in the crib, recommending removal at 5 months is more appropriate.

17. Comment on Ban Request #8

Proposed warning to keep toy away from baby's reach is inappropriate, some toys are intended to be touched: toys attached to headboards, rails and those just in the crib. Why warn to keep mattress low and rail high if caution not appropriate. These are two distinct warnings both of which are important, which comes first?. [#1]

Warning to move mattress to lowest position for product such as "crib wrap arounds" is unnecessary. [#5]

Recommend better and more conspicuous warning about crib dropsides in upright position with mattress in lowest position. [#10]

According to crib standard, no crib attachment may create a ledge or projection with a depth greater than 3/8 inch and be less than 51 centimeters (20 inches) above the mattress support in the lowest position and therefore create a hazardous toe hold. [#12]

Why warn to keep mattress low and rail high if caution not appropriate for toy that is attached to headboards, rails, or not attached. [#13]

Response

Staff agrees that any installation instructions that refer to the position of crib sides and mattress height in relation to the toy are only necessary with toys intended to be strung across the crib or playpen. They are not necessary for toys attached to the sides of the crib or playpen.

Table I Key to Ban Requests as listed in ANPR.

Number	Request
1	Ban any manipulative crib toy with a horizontal suspension member, unless (a) horizontal member is rigid and can be attached at or above height of the crib side rails; (b) the horizontal member does not have vertical protrusion; and (c) the toy is labeled with the following statement: **Warning** Always use both ends attached to opposite crib sides. Child could strangle on unconnected end.
2	Ban any crib toy with vertical strings 6 inches or longer.
3	Ban any crib toy with cords or other components which form a perimeter greater than 14 inches.
4	Ban any crib toy with any protrusion which can catch an infant's clothing or other item worn by an infant.
5	Ban any crib toy with a pull ring attached to a cord.
6	Ban any crib mobile that can be located within reach of an infant not capable of pushing up on hands or knees when inside the crib.
7	Ban any mobile that can be attached to a crib unless the following statement appears clearly and conspicuously on the product, its packaging, and as the first item in any instructions accompanying the product: **Warning** Keep toy away from baby's reach. Remove mobile and attachment clamp (and music box attachment, if applicable) when baby becomes 5 months of age or begins to push up on hands or knees. Child could strangle if clothing, head or neck gets caught on toy part.
8	Ban any crib toy which fails to include a conspicuous warning as the first item in any instructions accompanying the product to advise that when the toy is used in the crib, the crib sides should be raised and the crib mattress should be in one of the lower positions, or a strangulation hazard may result.

Table II Key to written comments

Number	Author	Affiliation
1	Daniel Chaucer	Daniel Chaucer
2	Michael Silberstein	Sligo International
3	Paul A. Ware	Kiddie Products, Inc.
4	Lucinda Sikes	U.S. PIRG
5	Kitty Pilarz	Fisher Price
6	Locker, Greenberg, and Brainin, P.C.	Toy Manufacturers of America, Inc.
7	Jon Stubenvoll	OSPIRG
8	Dennis J. Sullivan	Dolly, Inc.
9	Ellen S. Citron	MASSPIRG
10	Stephen Brobeck	Coalition for Consumer Health & Safety
11	Mary Ellen Fise	Consumer Federation of America
12	Marcella V. Ridenour	Temple University
13	Robert Cockburn	Jolly Jumper Inc.
14	J. Paul Frantz	J. M. Miller Engineering Inc.
15	Albert H. Brunwasser	Allegheny County Health Dept.
16	R. Benjamin Rietze	American Society Safety of Engineers
17	Dorothy Drago	Product Safety Consultant

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UNITED STATES GOVERNMENT

MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON,D.C. 20207

JUL 7 1993

TO : Jacqueline Elder, Director, EPHF

Through: Dr. Robert D. Verhalen, Associate Executive Director
Directorate for Epidemiology

FROM : Celestine M. Trainor, EPHF, 504-0468

SUBJECT: Comparison of Current and Proposed Voluntary Standard Requirements for Crib Toys and Staff Response

The purpose of this memorandum is to compare the current toy safety voluntary standard (ASTM F963) with the changes being proposed by the ASTM subcommittee as they relate to the ban requests (Table 1) proposed in the Advanced Notice of Proposed Rulemaking (ANPR) on Crib Toys. Staff response to the changes is included with each item. Staff judges that most of the proposed changes will adequately address the major areas of concern presented in the ANPR, with the exception of the string length issue. In parenthesis following the issue heading are the ANPR ban requests being addressed.

1. Labeling for toys strung across the crib or playpen (#1)

Current standard, ASTM F963-91

Crib gyms, crib exercisers, and similar toys intended to be strung across a crib or playpen shall bear the following cautionary label: "From birth to 5 months," and "CAUTION: To prevent possible entanglement injury, remove toy when baby begins to push up on hands and knees."

Proposed revision

Crib and playpen toys intended to be strung across a crib or playpen shall be labeled:

From birth to 5 months, and

WARNING

Possible entanglement or strangulation injury.
Remove toy when baby begins to push up on hands and knees.

Staff response

Staff agrees with the proposed labeling. It addresses the severity of the hazard by using the signal word "warning" and it conveys the message that the hazard is not just entanglement, but also strangulation.

2. String lengths (#1, #2, and #3)

Current standard, ASTM F963-91

For crib and playpen toys, "flexible strings or cords attached to any toy (excluding pull toys) shall be less than 12 in. (300 mm) when measured to the maximum length in the free state. If string can tangle to form a loop, then the perimeter of the loop shall be less than 14 in. (360 mm)."

Proposed revision

Cords or elastics included with or attached to toys intended for children less than 18 months of age (excluding pull toys) shall be less than 12 inches long when measured to the maximum length in the free state and under a load of 5 lbs. If cords/elastics or multiple cords/elastics can tangle and/or form a loop in connection with any part of the toy including beads or other attachments on the ends of cords/elastics, then the perimeter of the loop shall be less than 14 inches under a load of 5 lbs.

The ASTM working group does not believe that incident data show the need to reduce string lengths below 12 inches for crib toys. Most consumer complaints involving toys with strings or cords wrapping around a child's neck involve free standing toy telephones. Under the voluntary standard, toy telephones would be subject to the string length requirements because the requirement applies to all toys used by children under 18 months of age. Restricting the string/cord lengths on toy telephones to less than 7 inches means the phone cannot be used as intended by children in pretend play because the receiver will be too close to the phone base.

Staff response

Anthropometric data provide objective criteria to evaluate the entanglement and strangulation hazards associated with strings and cords. The incidents involving toy telephones confirm that children under 18 months wrap items around their necks. Therefore, while there are limited data on entanglement or strangulation incidents involving attached crib and playpen toys, allowing strings greater than 7 inches to be in this environment is a potential hazard. Staff maintains its position for the need to reduce string lengths for crib toys to 7 inches or less.

3. Protrusions (#4)

Current standard, ASTM F963-91

Does not address protrusions.

Proposed revisions

The ASTM Subcommittee F15.22 for Toy Safety has proposed including guidelines to address protrusions as part of the appendix of the voluntary standard ASTM F963. The Design Guidelines submitted by a manufacturer, will be included in the appendix since there is no objective means for determining conformance with them. The guidelines are intended to be used as guidance during the development of products intended to be attached to cribs or playpens, not to judge compliance with the voluntary standard.

Staff response

Staff is encouraged that the subcommittee is taking a proactive role in trying to prevent hazardous protrusions when objective testing criteria are not available.

4. Pull rings (#5)

Current standard, ASTM F963-91

Does not address pull rings.

Proposed revision

None

Staff response

Staff judges that removal of pull rings is not necessary. The strangulation hazard involving pull cords with rings could be addressed by limiting string lengths to less than 7 inches.

5. Mobiles (#6 and #7)

Current standard, ASTM F963-91

Does not address mobiles.

Proposed revision

Labeling for mobiles intended to be attached to a crib or playpen shall be as follows:

From birth to 5 months, and

CAUTION

Possible entanglement injury, keep out of baby's reach.

Remove mobile from crib or playpen when baby begins to push up on hands and knees.

Labeling for mobiles attached to wall or ceiling shall be as follows:

CAUTION

Possible entanglement injury.

Keep toy out of baby's reach.

Mobiles shall be provided with instructions for proper assembly, installation, and use to assure that the product does not present an entanglement hazard. The instructions shall include at least the following information:

1) A crib mobile is intended for visual stimulation and is not intended to be grasped by the child.

2) If attached to the crib or playpen, remove when child begins to push up on hands and knees. If so designed, mount on wall or ceiling clearly out of standing baby's reach.

3) If mounted on wall or ceiling, install the mobile clearly out of standing baby's reach.

4) Always attach all provided fasteners (strings, straps, clamps, etc.) tightly to crib or playpen according to the instructions. Check frequently.

5) Do not add additional strings or straps to attach to crib or playpen.

Staff response

Staff judges the proposed labeling and instructional literature will reasonably address the concerns with mobiles.

Some mobiles are designed with detachable music boxes. The mobile and music box are separable, so the music box can be left in the crib after the time when the hanging items on the mobile should be removed. There is some concern with leaving the music box in the crib because of potential protrusions. However, if the music box is designed according to the Design Guidelines provided in the voluntary standards, protrusion hazards are

likely to be minimized. The working group is recommending that the label for mobiles not require the music box attachment to be removed if the hanging items can be removed separately. Staff agrees with this recommendation.

6. Instructional literature for toys strung across a crib or playpen (#8)

Current standard, ASTM F963-91

The instructions for proper assembly, installation, and use shall include at least the following information: "(1) A crib gym is not intended to be 'mouthed' by the baby and should be positioned clearly out of reach of the baby's face and mouth. (2) On cribs with adjustable mattress levels, the highest position may allow the gym to be too close to the baby. The second or lower position is more appropriate. (3) The dropside of the crib should never be lowered with the gym in place and the baby left unattended."

Proposed revision

Toys intended to be strung across a crib or playpen shall be provided with instructions for proper assembly, installation, and use to assure that the product does not present an entanglement or strangulation hazard. The instructions shall include at least the following information:

1) This toy is not intended to be "mouthed" by the baby and should be positioned clearly out of reach of the baby's face and mouth.

2) On cribs with adjustable mattress levels, the highest position may allow the toy to be too close to the baby. The second or lower position is more appropriate.

3) The dropside(s) of the crib should never be lowered with the toy in place and the baby left unattended.

4) Always attach all provided fasteners (strings, straps, clamps, etc.) tightly to crib or playpen according to the instructions. Check frequently.

5) Do not add additional strings or straps to attach to crib or playpen.

Staff response

Staff judges that this information adequately conveys the necessary instructions for proper use and maintenance of the toy.

Table I Key to Ban Requests as listed in ANPR.

Number	Request
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2	Ban any crib toy with vertical strings 6 inches or longer.
3	Ban any crib toy with cords or other components which form a perimeter greater than 14 inches.
4	Ban any crib toy with any protrusion which can catch an infant's clothing or other item worn by an infant.
5	Ban any crib toy with a pull ring attached to a cord.
6	Ban any crib mobile that can be located within reach of an infant not capable of pushing up on hands or knees when inside the crib.
7	Ban any mobile that can be attached to a crib unless the following statement appears clearly and conspicuously on the product, its packaging, and as the first item in any instructions accompanying the product: **Warning** Keep toy away from baby's reach. Remove mobile and attachment clamp (and music box attachment, if applicable) when baby becomes 5 months of age or begins to push up on hands or knees. Child could strangle if clothing, head or neck gets caught on toy part.
8	Ban any crib toy which fails to include a conspicuous warning as the first item in any instructions accompanying the product to advise that when the toy is used in the crib, the crib sides should be raised and the crib mattress should be in one of the lower positions, or a strangulation hazard may result.

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DESIGN GUIDELINES

Purpose & Scope

To provide guidance for design practices intended to encourage the careful examination of product characteristics and configurations with respect to safety.

Toys Attached to Cribs or Playpens

Designs for all products intended to be attached to cribs or playpens should be accomplished in a manner that minimizes the potential for strings, ribbons, elastic or parts of clothing to become caught on the product, such that an infant is placed in a dangerous predicament where possible strangulation could occur.

Examples of the implementation of good design practices for crib and playpen environments include:

A. Rounded Corners with the use of generous radii wherever possible.

B. Smooth contours which minimize abrupt changes in shape that could easily become a catch point for strings, ribbons, elastic or loose clothing.

C. Isolation of fastening hardware using recesses, counter-bores, or other similar methods.

D. Reducing the potential for any mismatch of surfaces where a catch point could develop.

C.A.B. (4/13/88)