



**Child Safety Techniques for
Prevention of
Amusement Ride Accidents**

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Introduction

Problem Statement

Injury data from state and federal safety agencies indicates that amusement ride-related accidents are largely a child safety issue. According to the U.S. Consumer Product Safety Commission (CPSC), children account for 2/3 of all ride-related injuries. Toddlers and preschoolers are at higher risk than any other age group. Children are uniquely vulnerable to accidental injury due to their size, inexperience, immaturity, and impulsiveness.

The standard preventative measures employed by the amusement ride industry to prevent accidents, such as posted instructions and psychological barriers, do not work for young children. Child safety techniques are based on two interdependent components:

Childproof the Environment

AND

Closely Supervise the Child

Neither component will work alone when children are exposed to mechanical hazards as potentially lethal as those found in amusement rides. Historically, the amusement ride industry has relied on parents to understand, and guard against, the unique hazards amusement rides present to children. According to the CPSC, high rates of ride-related injuries for young children have remained relatively constant since the early 1980s. The prevalence of child safety-related accidents in this industry offers evidence that the current system is not working to protect children.

A Child-Centered Solution

Saferparks works to educate consumers, industry representatives, legislators, and the press about the causes and remedies of ride-related injuries. The goal is to form a safety partnership based on logical study and clear communication, to work simultaneously on the evolution of kid-safe rides and ride-safe kids. Toward that end, I've compiled the following information describing child safety techniques as they might be applied to the amusement ride industry.

Because I've quoted verbatim from parenting references, the advice sounds like it is targeted to parents. That effect is deliberate. *I believe the key to solving this problem lies in the industry's willingness to understand that they are placed in the role of parent when they act to protect patron safety on amusement rides.* Patrons, regardless of their age, tend to:

- Know very little about the specific dangers that amusement rides pose to riders
- Focus on their own enjoyment when they visit amusement parks
- Have a childlike trust that amusement parks are safe places

Those characteristics increase the likelihood that patrons will spend money freely, but they also decrease the likelihood that patrons will pay close attention to safety. Patrons can, and should, be expected to protect themselves and their children from commonplace dangers encountered at amusement parks and carnivals, such as stairs, fences, and curbs. (Whether patrons *will*



consistently guard against such injuries is another question altogether, one that lies outside the scope of this document.) Patrons cannot, however, be expected to understand or guard against mechanical hazards created by complex and unfamiliar ride machinery. That is the job of ride designers, manufacturers, operators, inspectors, etc.

Much of the material in this document describes child safety issues that might seem outside the scope of the amusement ride world. Yet the risk factors are the same, and I would urge the reader to look for parallels. By learning about common childhood injuries and preventative strategies in areas such as traffic safety and playground safety, ride designers and operators can begin to set appropriate and realistic expectations for children riding amusement rides.

Prevention as a Goal

No parent can protect a child from every conceivable danger. Nor can manufacturers and ride owners be expected to anticipate and circumvent every potential hazard. Accidents happen everywhere, despite our best efforts. The purpose of this document is to encourage a realistic and logical approach to prevention, so that we have the best chance of reducing the human and financial cost of ride-related injuries.



Childhood Accidents

According to the National Safety Council:

- About 1/3 of the 100 million emergency department visitors each year are children and teenagers.
- In the United States, injuries are the leading health problem in children over 1 year old.
- Injuries cause more deaths in children than all diseases combined and are the leading cause of disability.

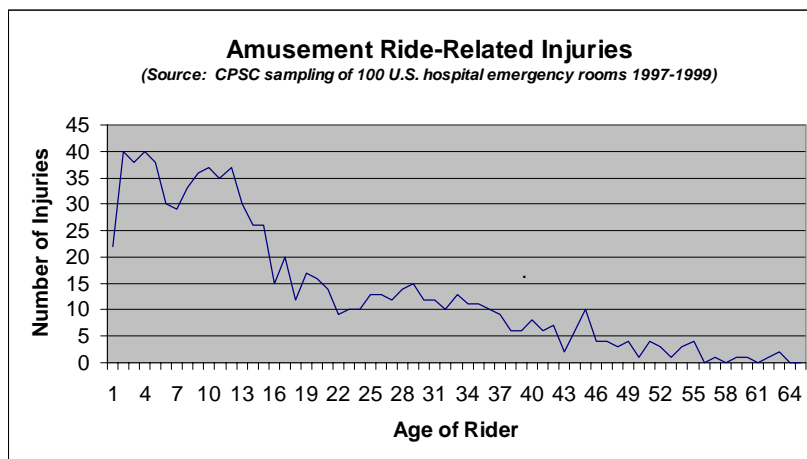
Top Eight Unintentional Causes of Fatal Injury in Children		
<u>0-1 Year Old</u>	<u>1-4 Years Old</u>	<u>5-9 Years Old</u>
1. Suffocation	1. Fire/burns	1. Motor vehicle occupant injury
2. Motor vehicle occupant injury	2. Drowning	2. Pedestrian injury
3. Fire/Burns	3. Pedestrian injury	3. Fire/burns
4. Choking	4. Motor vehicle occupant injury	4. Drowning
5. Drowning	5. Choking	5. Bicycle injury
6. Poisoning	6. Suffocation	6. Unintentional firearm injury
7. Pedestrian Injury	7. Falls	7. Suffocation
8. Falls	8. Poisoning	8. Falls

Source: National Center for Health Statistics

Amusement Ride-Related Injuries

According to the hospital emergency room data compiled by the U.S. Consumer Product Safety Commission:

- Children and teenagers account for 2/3 of all amusement ride-related emergency room visits.
- Toddlers and preschoolers are at higher risk than any other age group.





Preventing Childhood Injuries

Sources: *Dr. Spock's Baby and Child Care, The Children's Hospital Guide to Your Child's Health and Development*

The first line of defense against accidents and emergencies is prevention: Making your child's surroundings safe is a top priority in order to prevent accidents, both major and minor. As your child grows and changes, the safety precautions you will need to take will change with him.

Injuries cause more deaths in children over the age of one year than all illnesses combined. When you say "accident" everyone assumes it's something unavoidable – just one of those things you can't control in life. In some situations this is true. However, many of what we call accidents are really injuries that could be easily prevented.

Why do we all have so much trouble taking the necessary *[preventative]* actions regularly? I think it's because of a natural human tendency to go through life with an attitude of "It can't happen to me." So the first step is to stop denying the possibility of an injury. Then practice the two basic principles of effective injury prevention:

- **Child-proof the environment.** Be aware of your environment in order to identify and reduce hazards as much as possible. To prevent injuries, it is necessary to remove dangerous objects from your child's reach. Begin to teach good safety habits and change hazardous environments that contribute to injuries.
- **Supervise your child closely.** The second principle of injury prevention is vigilant supervision of your child. Even in a childproofed environment, children require close supervision. Toddlers especially, take chances, lack judgement, and need the protection of an adult. Of course you can't spend every waking minute keeping track of your child, but some environments are inherently more dangerous than others.

Vehicle injuries

All fifty states have laws requiring that children under age four be properly restrained in a child safety seat when a car is in motion. Parents expect that amusement rides approved for young children are designed to restrain their children in the same way as carseats do. They assume that lap bars perform that function.

Pedestrian injuries

Note: This section illustrates the amount of time, patience, and repetition required before children can safely handle themselves around dangerous vehicles, such as cars or amusement rides. It is unrealistic to expect that young children can protect themselves.

School-age children are especially at risk because they are frequently exposed to traffic but do not have enough skill to handle it. Their peripheral vision isn't fully developed. They can't accurately evaluate the speed and distance of oncoming cars. Many don't have the judgment to know when it's safe to cross. Research shows that adults generally give their children credit for more street smarts than they actually have.



Guidelines for pedestrian safety:

- From the time your child begins to walk on the sidewalk, teach him that he can step off the curb only when you are holding his hand.
- Always supervise the outdoor play of preschoolers and make sure they never play in driveways or streets.
- Explain to 5- to 9-year-olds over and over again the rules about crossing residential streets. Model safe pedestrian behavior yourself, as you walk with them. Point out how traffic lights and crosswalks work, and why it's so important to look left, right, and left again, even when they have the traffic light in their favor and even when they are in a crosswalk.
- Remember that children aren't developmentally ready to cross a heavily traveled street without adult supervision until they're at least nine or ten years old.
- Together with your child, find the safe places to play in your neighborhood. Explain repeatedly that he must never run into the street when playing, no matter how important the game may seem.
- Think about where your child walks, especially on the way to school, to the playgrounds, and to playmates' houses. Walk with him, as if you are explorers, and find the safest route with the easiest street crossings. Then help him learn that the safest route is the only route his should use.
- Try to find the time to get involved in community safety. Find out if there are enough traffic signals and crossing guards on the way to your child's school. If a new school is being built, look into the traffic pattern in that area. Will there be enough sidewalks, lights, and guards?
- Be particularly cautious with toddlers in parking lots and insist that they hold your hand. Keep toddlers in wagons or put them in the car while loading bags.

Drowning and water safety

Drowning takes the lives of more than 1000 children under age 14 each year, ranking as the second leading cause of injury death to children in this age group. For every child who drowns, an additional four are hospitalized after nearly drowning. Children under age four have a two to three times greater drowning rate than any other age group.

Swimming pools, spas, and hot tubs present the greatest risk to children between 1 and 4 years old. Children 5 to 14 years old frequently drown in open water sites (lakes, rivers, oceans) and swimming pools.

Children up to age five just don't have enough strength and coordination, even with lessons, to float or swim out of danger. Early swim lessons may even increase the risk of drowning by giving parents and children a false sense of security.

Falls

Falls are the sixth leading cause of injury death, and are the leading cause of nonfatal injury. Falls occur from as many places as you can imagine: from beds, changing tables, down the



stairs, from windows and porches, out of trees, off bicycles and play equipment, on ice, and so on. Toddlers are especially at risk for falls from windows and down stairs; older children are at risk of falling from rooftops and playground or recreational equipment.

Safety straps on toddler equipment

By law, strollers, bike trailers, and other equipment created for toddlers must come equipped with safety straps. Children of this age will climb out of anything, even a moving amusement ride.

Playground injuries

Note: Many of the same risk factors that apply to playground injuries also apply to amusement ride injuries.

More than 200,000 children are seen in hospital emergency rooms each year as a result of playground injuries. About 75% of these are the result of falls. Children under six are at greatest risk for head injuries from the impact of moving swings. For children older than six, limb fractures from falls are most common.

Toddlers are in the process of testing their limits and learning new skills on the playground. Many sustain injuries on playgrounds because of their lack of balance and coordination; adult supervision is a must. For those fearless toddlers who take physical risks, an adult should always be monitoring their activity on the equipment.

Head Injuries

Almost 30 percent of deaths from childhood injuries result from head injuries each year, and about 29,000 children experience permanent disability resulting from head injuries.

<p><u>Signs and symptoms:</u></p> <ul style="list-style-type: none"> • Headache • Unconsciousness • Seizures • Dazed state • Irritability • Vomiting • Drowsiness • A bump or an indentation on the skull • Discharge of blood or straw-colored fluid from nose and ears • Pupils are unequal in size or fail to constrict normally when exposed to light 	<p><u>Call for emergency help if:</u></p> <ul style="list-style-type: none"> • Child cries for more than 15 minutes after the head injury • Child has a seizure • Child is unconscious after the injury • Blood is coming from an ear canal or nose • Child seems off balance while sitting, crawling, or walking • Child can't remember getting the injury • Child has a severe headache • Child's pupils are not equal in size • Child has forceful repeated vomiting
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Dental injuries from trauma

Dental injuries can occur in all teeth, although usually the teeth in the front of the mouth are most commonly traumatized. Teeth can be cracked, displaced from their sockets, or completely knocked out. Dentists are concerned about trauma to primary teeth, but even more so about damage to permanent teeth, which can have important lifelong consequences.



1-year-olds

Size

Ranges from 3rd percentile to 97th percentile

Source: National Center for Health Statistics

12 months: 17-28 pounds, 27-32 inches tall

30” riders (1-year-olds) are allowed unaccompanied on:

- Venture Jr. Space Tower, Raceway, Venture Go Round, Venture River
- Some kiddie trains

Source: Haas & Wilkerson Insurance

Developmental Factors

- One-year-olds are demon explorers. They poke into every nook and cranny, finger the carving in the furniture, shake a table or anything else that isn't nailed down, want to take every single book out of the bookcase, climb onto anything they can reach, fit little things into big things, and then try to fit big things into little things. In short, they are into everything. *Dr. Spock's Baby and Child Care*
- The hardy explorer also begins to develop fears of certain things at this time. She may become frightened by strange objects that move suddenly or make a loud noise. Don't try to convince her it's a ridiculous fear; her terror makes perfect sense to her at her level of understanding. *Dr. Spock's Baby and Child Care*
- One-year-old children are exuberant. They walk into a room as if they own it. They think everything is theirs to explore. There's no cabinet door they won't open, no button they won't press, no knob they won't turn. Nothing can stop them. Fear? Danger? Self-control? These don't exist in the mind of a 1-year-old child. *The Children's Hospital Guide to Your Child's Health and Development*
- Toddlers learn by doing ... Between 1.5 and 2 years, children start to solve problems creatively. If a ball rolls under the couch beyond your child's reach, for instance, he might try to get it out by prodding it with something long and thin, like a ruler. If he wants something in the kitchen that's too high for him to reach, he might figure out that one solution is to carry the step stool from the bathroom and stand on it. *The Children's Hospital Guide to Your Child's Health and Development*



2-year-olds

Size

Ranges from 3rd percentile to 97th percentile

Source: National Center for Health Statistics

24 months: 22-34 lbs, 31-37 inches tall

36” riders (2-year-olds) are allowed unaccompanied on:

- A.R.M. Boneshaker, Happy Viking
- All Designs International rides
- Except Dodgem, Lusse
- Majestic Scooter and Mini Bumper Cars
- All Satori kiddie rides
- Venture Carousel, Elephant Tower, Tubs of Adventure, 4x4 Pickup, Critter Trac, Mini Australian Worm
- Watkins Hustler, Swinger, Tempest
- Some kiddie trains

Source: Haas & Wilkerson Insurance

Developmental Factors

- The two-year-old learns by imitation. She is making giant strides forward in skill and understanding by means of constant imitation. *Dr. Spock's Baby and Child Care*
- Two-year-olds are notoriously mischievous ... They love to do things like throw your glasses in the toilet, draw on the wall with crayons, and toss peas on the floor to see how far they'll roll. Even so, there's a certain innocence in toddler's antics. At that age, your child often doesn't understand that she is doing anything wrong. *Your Three- and Four-Year-Old*
- Toddlers this age act more like big kids. The change in their posture enables them to run faster than before and walk up and down stairs without clutching an adult's hand. But their exploration and curiosity can get them into trouble. They'll be climbing on countertops or standing up in their strollers and getting lots of bumps and bruises in the process. *The Children's Hospital Guide to Your Child's Health and Development*
- Two-year-old children do not understand long explanations or lots of details about future events. Keep your explanations simple and short. *The Children's Hospital Guide to Your Child's Health and Development*
- Your child is learning problem solving. He figured out that by pushing a chair over to the bookshelves he can reach things higher up. Your child can now analyze a situation and figure out new ways to get what he wants. He is also becoming more interested in how things work. *The Children's Hospital Guide to Your Child's Health and Development*
- Many normal children develop a fear of being separated from the parent beginning around the age of one year. *Dr. Spock's Baby and Child Care*



3- to 5-year-olds

Size

Ranges from 3rd percentile to 97th percentile

Source: National Center for Health Statistics

3rd birthday: 24-40 lbs, 34-41 inches tall

4th birthday: 28-46 lbs, 37-44 inches tall

5th birthday: 32-54 lbs, 39-47 inches tall

42” riders (4-year-olds) are allowed unaccompanied on:

- A.R.M. Super Paratrooper
- Chance Astro Wheel, Carousel, Century Wheel, Falling Star, Giant Wheel, Yo-Yo, Zumer
- Except Thunder Road Coaster
- Eli Bridge Scrambler
- Fabri U.S.A. Pirate
- Majestic Central Park, Quadzilla, Mid-size Bumper Cars
- Oregon Krazy Kars
- Sellner Barrel-Go-Round, Bear-Go-Round, Berry-Go-Round, Spin-the-Apple, Windjammer
- Tivoli Star Force, Scorpion
- Venture Adult Himalaya, Mini Himalaya, Cobra
- Wisdom Astroliner/Starship Cinema, 60’ Free-wheeling Dragon Wagon, 4x4, Go Gater/Clatterpillar, Raiders, Starship 2000/Gravitron
- Zamperla Flume rides, Galeon rides, Balloon Race, Columbus Voyager, Convoy, Crazy Bus, Dancing Fly, Discovery, 8’ and 12’ Ferris Wheel, Flying Elephants, Joker, Matterhorn, Merry Go Round 60’, Minuetto, Musical Carousel, Swing Dance, Top Jet Telecombat, Zeppelin, Zeppelin Tower
- Kiddie Trains

Source: Haas & Wilkerson Insurance

Developmental Factors

- Although preschoolers are starting to grasp key notions of safety, like cause and effect, they lack the tools to police their own behavior. Even many four-year-olds still believe that their wishes and expectations actually control what happens, a “magical” thought process that can get them into a lot of trouble. For instance, although your preschooler may know that cars are dangerous, she might run in front of one anyway, believing that the car will stop simply because she wants it to. *Your Three- and Four-Year-Old*
- Now that your child is coming into her own as a small, fairly competent person, she’s going to want to be treated like one – all the time ... The trouble is, there are still many skills that lie just beyond the limits of her ability. Buttoning buttons. Tying shoes. Crossing the street. *Your Three- and Four-Year-Old*



- There will be days when she'll be cooperative and eager to please ... On the other hand, she'll have moments when she's extremely willful ... It's not unusual for a four-year-old to believe she knows more than her parents. She may regularly test the limits of your power in an effort to stake out her own unique claim on the universe. *Your Three- and Four-Year-Old*
- Simple, straightforward rules, such as "You must hold my hand in the parking lot," repeated hundreds of times seem to work best. *Your Three- and Four-Year-Old*
- Repeating things is his way of understanding and learning about them. He's doing the same thing we all do when we're learning about something new – repeating it until he gets it down cold. It's just that, for him, everything is new, so he'll want to repeat things that seem mundane and trivial to you. *Your Three- and Four-Year-Old*
- This is an age of major confidence swings. Your swaggering, boasting child can be transformed into a shy, frightened creature in a matter of moments. Her behavior is likely to be confusing to you, but imagine what it must feel like to her! She is struggling to stay in control of her emotions, to be big and brave, yet she's constantly bombarded by new information and incidents that make her feel small and scared. *Your Three- and Four-Year-Old*
- Most preschoolers, especially older ones, have a healthy respect for rules and will recite them any chance they get. You'd think, then, that your child would actually start following them. Unfortunately, that's not the way it is. Misbehavior is more difficult to understand than this age, because there is a willful component to it. *Your Three- and Four-Year-Old*
- Preschooler's self-control is still shaky at best ... Pair that with a developmental urge to stake out her own rights and assert her need for greater freedom, and you have a situation that's ripe for misbehavior. *Your Three- and Four-Year-Old*
- But children this age also crave limits. Even as they push the envelope of your rules, they want you to show them where the boundaries are and to enforce them strictly and consistently. Without limits, they feel wild and dangerously out of control. *Your Three- and Four-Year-Old*
- In certain egregious situation ... you may even think to yourself, "How dare she defy me?" Indeed, it can be difficult to cope with the fact that, despite your best efforts to set reasonable, clear rules, your child still disobeys ... At moments like this it can help to remember that her behavior is part of the developmental process. Children don't learn something after hearing it once, just like you didn't pick up algebra after one day of class. They need to hear rules over and over again before they actually sink in. Likewise, children need to test the rules to make sure they're really set in stone. *Your Three- and Four-Year-Old*
- When children of three or four tell a made-up story, they aren't lying in our grown-up sense. Their imagination is vivid to them. They're not sure where the real ends and the unreal begins. *Dr. Spock's Baby and Child Care*
- New types of fear crop up fairly often around the age of three and four. Children's imaginations have now developed to the stage where they can put themselves in other



people's shoes and picture dangers that they haven't actually experienced. *Dr. Spock's Baby and Child Care*

- A four-year-old's thinking is becoming more logical, but their logic only goes so far. For example, they may assume that a nickel is worth more than a dime because it's bigger. *The Children's Hospital Guide to Your Child's Health and Development*
- Children in the age period between two-and-a-half and five want to know the reason for everything, worry easily, and apply dangers to themselves. This is also the age period in which there is naturally a great interest in physical mastery of all kinds (hopping, running, climbing), which makes body intactness very important and being broken very upsetting. *Dr. Spock's Baby and Child Care*
- Wide variations exist in the normal rate of development of children between the ages of 4 and 5. Many parents find that the discipline methods they used a year ago are losing their power. Preschoolers are more difficult to distract than toddlers, and other methods, such as time-out, may be wearing thin. By around age 4, children can be defiant, so parents need to be more resourceful. *The Children's Hospital Guide to Your Child's Health and Development*
- Look in any kindergarten class, and you're bound to see striking variations in the children's body types, height, and weight. It's not unusual to see a 3-foot, 8-inch child weighing a mere 40 pounds standing next to another who's 4 feet tall and weighing nearly 60 pounds. Both these sizes and weights are normal for 5-year-olds. Dramatic variations in size can be found among children throughout the early school years. *The Children's Hospital Guide to Your Child's Health and Development*
- The change that takes place in the middle of the fifth year is not a blatant desire to be uncooperative or disobedient. Rather it's a need to experiment with taking the next step away from you. With a reserve of total trust in you, your child is willing to risk your anger and disappointment for the payoff of proving that he's even more capable than you think he is. He might, for example, attempt to show you how he can swim by diving off the deep end of a pool, whether or not he's really able to stay above the waterline ... He might expect compliments for his actions, even when they defy your spelled-out rules and even when the results are clearly (even to him) not good. *Your Five- and Six-Year-Old*



6- to 11-year-olds

Size

Ranges from 3rd percentile to 97th percentile

Source: National Center for Health Statistics

6th birthday: 34-62 lbs, 41-49 inches tall

7th birthday: 38-72 lbs, 44-52 inches tall

8th birthday: 43-82 lbs, 46-55 inches tall

9th birthday: 47-94 lbs, 48-58 inches tall

10th birthday: 52-108 lbs, 49-60 inches tall

11th birthday: 58-124 lbs, 51-62 inches tall

By the time children in the 97th percentile height range are 6-7 years old, they are allowed to ride most amusement rides unaccompanied.

Developmental Factors

- Five- and six-year-olds, even though they can repeat the rules of street crossing to you and demonstrate their understanding when they're with you, are not consistently mature enough to be allowed to cross the street on their own. That ability doesn't usually come until a child is about eight years old ... While five- and six-year-olds are capable of learning to swim, their abilities should not be seen as protection against drowning. *Your Five- and Six-Year-Old*
- Between the ages of five and six, your child really is ready to move on somewhat. Teaching him rules of safety goes a long way toward protecting him. He's just not ready to take on the whole job of keeping himself safe yet. *Your Five- and Six-Year-Old*
- After six, children become more independent of their parents, even impatient with them. They're more concerned with what the other children say and do. *Dr. Spock's Baby and Child Care*
- Until around age seven, she will still believe in magic and the power of wishes, but her feet are becoming more firmly planted in the world. *Your Five- and Six-Year-Old*
- It takes years for each individual to learn how to get along in the complicated adult world. Probably that's the reason human beings are held up so long in their physical growth. The infant increases rapidly in size like an animal, and so does the older child in the puberty period. But in between they slow down more and more, particularly in the two years just before puberty development begins. It's as if their nature were saying, "Whoa! Before you can be trusted with a powerful body and full-grown instincts, you must first learn to think for yourself, control your wishes and instincts for the sake of others, learn how to get along with your fellows, understand the laws of conduct in the world outside your family, and study the skills by which people live." *Dr. Spock's Baby and Child Care*



Adolescence

- One way for the adolescent to reach these milestones [separation from parents] is by taking risks. Risk-taking can foster a mastery of life skills, enhance self-esteem, and develop decision-making strategies. As adults we are able to calculate risks and weigh benefits because as adolescents we learned, through trial and error, how much risk we were willing to take and what the cost of those risks might be. As parents, your role is to help your children to safely take risks through providing limits. *Dr. Spock's Baby and Child Care*



Setting and Enforcing Rules and Limits

Adults and older children can, and should, learn to comply with safety rules. Teaching patrons safety rules in the hyper-stimulating environment of an amusement park or carnival is not an easy task. It takes creativity, patience, and consistency. The techniques in this section can be adapted to patrons of any age.

It's important to start teaching young children about safety from the first time they get on a ride. Learning about safety is a long process for a child, however. Think of ride safety along the same lines as traffic safety. The early lessons aren't intended as instant protection, but the constant repetition gradually teaches the child about basic safety rules. When he's older, he'll be better equipped to protect himself. *Never count on rules and regulations to protect a young child from danger on an amusement ride.*

The Children's Hospital Guide to Your Child's Health and Development:

1. **Listen to your child.** Not only will you show him that you respect him (which will make him more inclined to do as you say), you'll pick up clues as to why your child misbehaves in a certain way.
2. **Stay calm.** Children are more likely to listen when you look them in the eye and speak in a normal tone of voice.
3. **Set a good example.** If you routinely say "please" and "thank you" and treat others with respect, your child will, too.
4. **Make it clear that you mean business.** Provide incentives for your child to behave properly, and tell him the consequences if he doesn't. When you set consequences, enforce them.
5. **Remove privileges.** Let your child know that if he does not adhere to the rules and limits you set, then he will lose something he wants. Then follow through every time. Make the consequences in proportion to the offense, or you'll have trouble following through.
6. **Catch him being good.** Point out and reward good behavior, especially when your child does something good without your having to ask him to do it.

Dr. Spock's Baby and Child Care:

- How well the guidance works depends on whether the parents [*ride owners/operators*] are reasonably consistent, whether they mean what they say, and whether they are directing or prohibiting the child for a good reason.
- Avoid threats as much as possible. They tend to weaken discipline.
- Parents [*ride owners/operators*] who can't control their children [*patrons*] ... need help. The first thing you see when you watch such a parent, is that she doesn't appear to be really trying, even though she wants to and thinks she is. She threatens or scolds or punishes frequently. But one such mother almost never carries out a threat. Another, though she



punishes, never in the end makes the child do what she said he had to do. And another makes him obey once, but five minutes later and again ten minutes later she lets him get away with it. Another laughs in the middle of a scolding or punishment. Another just keeps shouting at the child that he's bad or asks a neighbor, right in front of the child, whether she has ever seen a worse one. Parents like these unconsciously expect the child's bad behavior to go right on and can do nothing effective to stop it. They are inviting misbehavior without realizing it. Their scolding and punishment are only an expression of frustration. In their complaints to neighbors they are only hoping to get some comforting agreement that the child is truly impossible.



Sample Accident Data

The following table summarizes 23 accident investigation reports sent from the New York State Dept. of Labor. Eleven of the 23 accidents are child safety-related (entries marked in bold). The majority of the remaining 12 accidents were caused by equipment breakage, improper setup, or collision.

<i>Date</i>	<i>Type of ride</i>	<i>Description of accident</i>	<i>Number of Patrons Injured</i>	<i>Injuries</i>	<i>Corrective Action</i>
9/7/96	Turtle Ride	Child stood up in ride as it started and fell out.	1 child	<ul style="list-style-type: none"> Struck face on concrete platform. 	<ul style="list-style-type: none"> Reviewed and confirmed ride operating procedure with employer.
3/23/97	Mini Ferris wheel	2 passengers fell from seat above; female caught foot under seat as she was being helped from seat.	3 children	<ul style="list-style-type: none"> 1 child broke eye orbit, had surgery-insertion of metal plate/screws and about 70 stitches. 1 child had bruises on head, side, leg. 1 child complained of double vision and disorientation. 	<ul style="list-style-type: none"> Ferris wheel was taken out of service pending further investigation. Children were allowed to stand on seats, shoulder harnesses were not used. Ferris wheel stopped abruptly causing fall.
6/21/97	Quantum Loop Roller Coaster	Equipment malfunction resulting in abrupt stop.	7 children 2 adults	<ul style="list-style-type: none"> 9 riders transported to hospital, treated and released. Riders reported neck and back pain, headaches, muscle soreness. One rider had a seizure during evacuation (previous history of seizures). 	<ul style="list-style-type: none"> Ride to be repaired, retested and inspected before being put back into service. Park has contacted ride manufacturer regarding possible redesign of trolley wheels.
6/27/97	Mini Jet 6	Sweep came down suddenly, hitting ride, then ground	2 children	<ul style="list-style-type: none"> Contusions to the face. Abrasions to the back. Both transported to hospital, treated and released. 	<ul style="list-style-type: none"> Closer attention to ride assembly and pre-opening inspection procedures.
2/21/98	Bumper Cars	Patron tripped on Bumper Rail	1 child	<ul style="list-style-type: none"> Bruised knee, shoulder, elbow Loose front teeth 	<ul style="list-style-type: none"> None ordered by state. Park management put contrasting colored tape on barrier.
6/6/98	Terminator	Worn pawl caused lap bar to release, ejecting rider.	1 child (8 years)	<ul style="list-style-type: none"> MRI showed compressed vertebra of the neck. 	<ul style="list-style-type: none"> Set up program to inspect pawls weekly, instruct operator in proper procedure to lock body harness in place.



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6/8/98	Spinach Spinnaker (teacups)	Child's fingers became entangled in leash as it wound around spindle	1 child (9 years)	<ul style="list-style-type: none"> Traumatic amputation of fingertips on middle and ring fingers of right hand. 	<ul style="list-style-type: none"> Directive to ride operators that no passenger be allowed to board ride with loose clothing or devices on their persons.
6/18/98	Nightmare Roller Coaster	Coaster car stopped abruptly	3 riders	<ul style="list-style-type: none"> #1 - Internal abdominal injuries. #2 - Broken nose and facial cuts. #3 - Minor contusions and abrasions. 	<ul style="list-style-type: none"> Inspection showed cracked joint on brake pad; deformed end of brake jammed into front of car's brake pan causing abrupt stop. State ordered that the ride be repaired and inspected prior to reopening.
8/2/98	Sidewinder	Child ejected from gondola due to centrifugal force.	1 child	<ul style="list-style-type: none"> Deep puncture wound, multiple abrasions, contusions, and laceration on left leg. 	<ul style="list-style-type: none"> Review adjustments for lapbars as well as height requirements for ride.
8/10/98	Sidewinder (same ride as previous entry)	<p>Child ejected from gondola.</p> <ul style="list-style-type: none"> Mother stated that the child had been leaning between the lap bar and side of the ride. Witness stated that he saw the victim stand up, then fall out of the car through the space between the end of the lap bar and the side of the seat. 	1 child	<ul style="list-style-type: none"> Bruises to upper leg. 	<ul style="list-style-type: none"> Park changed rider height restrictions from allowing a person under 48" to ride with an adult to no riders under 48". (note: state inspector measured victim to be 48.25 inches tall.) State recommended additional passenger restraint procedures.
8/18/98	Merry Go Round	Unknown	1 child	<ul style="list-style-type: none"> Broken arm 	<ul style="list-style-type: none"> Continue existing daily inspection program.
8/29/98	Spinach Spinnaker (teacups)	<p>Boy fell from gondola/car and struck platform.</p> <ul style="list-style-type: none"> Victim was riding with 2 older children. Witness stated that the car was spinning fast, the victim looked ill, then came out of the car over the top of the side. 	1 child	<ul style="list-style-type: none"> Unknown (transported to hospital, treated and released). 	<ul style="list-style-type: none"> None.



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5/12/99	Go Kart	Rider was getting back into his Go Kart on the track when his vehicle was hit by another.	1 adult (21 years)	<ul style="list-style-type: none"> • Visible laceration to leg • Possible broken leg/ankle. 	<ul style="list-style-type: none"> • None.
5/16/99	Superman Roller Coaster	Passenger ejected from seat, struck another rider, and fell to the ground below.	1 adult (37 years); 1 child (17 years)	<ul style="list-style-type: none"> • Adult - Contusions and abrasions • Child – Cracked collar bone, bruised knee. 	<ul style="list-style-type: none"> • Park restricted size of passengers allowed to ride. • Installed seat belts as redundant passenger restraint devices.
5/20/99	Wisdom Sizzler	Amusement ride hit fence dislodging light fixture that was attached to the fence.	1 child (7 years)	<ul style="list-style-type: none"> • Head laceration 	<ul style="list-style-type: none"> • Ride operator instructed to stake down fencing into the ground.
6/9/99	Bumper Cars	Electric wire energized fence child was holding.	1 child	<ul style="list-style-type: none"> • Electric shock 	<ul style="list-style-type: none"> • Investigation found damaged wire insulation on electrical plug. • All plugs and electrical cords be closely examined and repaired.
7/15/99	Sky Diver	Ride hydraulic hose caught on 2 spinning ride passenger carriers, tearing tops off carriers and leaving passengers unprotected. No persons were ejected. The ride was evacuated by firefighters.	9 riders	<ul style="list-style-type: none"> • All transported to hospital, treated and released. 	<ul style="list-style-type: none"> • Investigation showed the accident was caused by improper assembly, involving hydraulic hose hold down clamps.
7/25/99	Roller Coaster	Roller coaster car crashed into another car.	2 children (13 years, 12 years)	<ul style="list-style-type: none"> • #1 – Neck sprain • #2 – Sore back 	<ul style="list-style-type: none"> • Fix broken chain dog. • Instruct operators to account for each car released and make sure there is a safe distance before releasing another car.



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8/19/99	Wacky Worm kiddie coaster	Child was leaning out of car when face hit fence.	1 child (7 years)	<ul style="list-style-type: none"> • Facial lacerations • Loose teeth • Bruises 	<ul style="list-style-type: none"> • State determined that the location of fence was unsafe, and the ride was being operated at excessive speed • Carnival instructed operators to use slow down brake and maintain a minimum psi setting of 40. • Investigation report also noted that the lap bar did not fit closely against the child, and might have been a contributing factor. • Operators stated that parents are always encouraging their children to put their hands in the air in spite of the operator's constant reminders to hold on.
11/1/99	Bumper Cars	Electric shock from contact with metal floor.	1 child (14 years)	<ul style="list-style-type: none"> • Electric shock to left hand. 	<ul style="list-style-type: none"> • Train personnel in proper operation and evacuation of ride.
1/8/00	Carousel	Child's hand contacted light socket	1 child (8 years)	<ul style="list-style-type: none"> • Electric shock to left hand 	<ul style="list-style-type: none"> • Maintain electrical system to be in compliance with code (i.e., replace any open bulbs in sockets at all times).
6/17/00	Viper Roller Coaster	Inebriated patron attempted to board ride car, slipped and fell between cars.	1 adult (22 years)	<ul style="list-style-type: none"> • Cut forehead • Bruises to chest, pelvis, arms, and legs 	<ul style="list-style-type: none"> • None.
8/24/00	Bobsled Roller Coaster	Child's head hit left side of roller coaster car.	1 child (2 years)	<ul style="list-style-type: none"> • ¼ inch cut to upper eyelid. • Victim went limp and lethargic; pupils constricted; responded to painful stimuli only and unresponsive most of time. • Transported by ambulance to hospital. 	<ul style="list-style-type: none"> • Padding has been added to both sides of all Bobsled cars.



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- New York State Department of Labor, Governor W. Averell Harriman, State Office Building Campus, Building 12, Albany, NY 12240
- National Center for Injury Prevention and Control, 4770 Buford Highway NE, Mail Stop K63, Atlanta, GA 30341-3724, (770)488-1667, www.cdc.gov/ncipc
- National Safe Kids Campaign, 1301 Pennsylvania Ave., NW, Suite 1000, Washington, DC 20004-1707, (800)441-1888, www.safekids.org
- National Safety Council, 1121 Spring Lake Dr., Itasca, IL 60143-3201, (800)621-7615, www.nsc.org