Inflatable amusements (commonly known as moon walks, space walks, and bouncy castles) can be found at small backyard parties as well as at large fairs and amusement parks. While these amusements are very popular with children and young adults, they can also cause serious injury and death. The rates of injuries are increasing at 15% according to a 2012 article in the journal, Pediatrics. This same article goes on to say that the rate doubled between 2008 and 2010, with 31 children per day treated in emergency rooms. Other data from the report:

- The average patient age was 7 ½ years old.
- Most injuries were fractures (27.5%) and strains or sprains (27.3%), and most injuries occurred to the lower (32.9%) or upper (29.7%) extremities.
- Most injuries occurred at a place of sports or recreation (43.7%) or at home (37.5%).
- 3.4% of injured children were hospitalized or kept for 24 hours for observation.

Well-manufactured, -installed, -operated, and -maintained inflatable amusements provide thrills and recreation for thousands of children, teens, and adults every year. Operating the inflatables well, however, is no small task. Every year, there are deaths from inflatables making contact with electrical wires; being blown into traffic; and, being blown so violently that those inside are fatally injured. The website, RideAccidents.com, lists the many serious accidents that have occurred on inflatables in the US and Canada since 2000.

Safety organizations around the world are taking actions to mitigate the hazards related to inflatable amusements. The following, lists the most important actions that one can take. Many of these actions are recommended by the American Society for Testing and Materials (ASTM) best practice, F2374 – 10 Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices, available at www.astm.org. Some states, provinces and
and local jurisdictions will have their own standards and laws, but there is no US or Canadian governmental regulation dictating how inflatable amusements should be made, installed, operated, and maintained.

**Supervision**

Active adult supervision is required. If the manufacturer specifies that one or more operators or attendants be on hand, these personnel should be provided, and the training recommended by the manufacturer must also be provided. Training resources are available in ASTM standard F770 Practice for Ownership, Operation, Maintenance, and Inspection of Amusement Rides and Devices.

**Emergencies and Evacuation of the Inflatable**

- Review the weather and postpone bounce house activities when high winds or lightning is present or forecasted. If the manufacturer does not specify the highest allowable wind speed, 40 km/h (25 mph) should be used (ASTM F2374-10/6.1.11.1). Operator should monitor wind speed periodically during operation of the inflatable. A variety of handheld anemometers or wind meters can be purchased for under $100 and are a good means to gauge safe wind conditions.
- The unit must be designed to allow safe evacuation in the event of deflation.
- Anchor stakes and other anchorage equipment and blower equipment must be kept clear of the entrance.
- Where zippers are used as exits, they must be reliable, easy to use, and must be capable of being opened from either side.
- Clear installation and operating instructions must be provided.
- Whenever possible, installation should be done by qualified personnel. Usually, this means the rental company does the installation. At larger facilities such as amusement parks, qualified personnel are typically readily available.
- Instructions from the manufacturer are preferable but if not available, the rental company should provide such installation and operating instructions. Manufacturers will usually be the best source for information on the inflatable’s anchorage system including where the anchors go, of what the anchors should be made, how many must be used, how strong the anchors must be, and the wind speeds allowable.
- There should be no deviation from the manufacturer’s suggested inflation pressures and the number of blowers.
- All signs recommended by the manufacturer or rental company should be displayed, including age restrictions and the capacity of the inflatable by weight or number of users.
- Inflatables must be constructed of flame-resistant materials.
- **Electrical**
  - Ensure the bounce house is installed away from power lines, including those overhead or attached to structures and poles.
  - The blower should be plugged into a GFCI (ground fault circuit interrupter).
  - Extension cords should be minimized or avoided, but if used, they must be properly rated for the load and the environmental conditions (for example, if used outside, they must be rated for outdoor use). Cords should also be placed out of traffic areas and secured to prevent trips and falls.

- **Fuel and Generators**
  - If the blower is fuel/generator powered, additional precautions must be taken in regard to:
    - Carbon monoxide buildup inside and around the inflatable. Generators should be used outside, away from all doors, windows, and vent openings.
    - The safe handling of the flammable fuel (proper cans). When refueling, the generator should be shut down and allowed to cool.
    - Fire prevention plan including proper fire extinguisher.
    - A backup fuel supply should be on hand to allow a complete evacuation of the amusement.
    - Generators must be used in strict accordance with the manufacturer's instructions.

- **Anchoring**
  - Ensure that the ground is free of any sharp objects that would puncture the house. If the manufacturer specifies that the ground be covered with protective materials, such a cover should be installed under the inflatable.
  - Anchor the bounce house (on level ground).
  - Anchors must be fixed, stationary objects (and must not include trucks, cars, or other vehicles) and located so that they do not create additional hazards.
  - Anchors must not impede evacuation of the inflatable.
  - Anchors must not be installed at the entrance(s) to the inflatable so as to cause tripping hazards.
  - Anchors must be installed so as not to impale users who tumble against them from inside the inflatable.

- **Operating the Inflatable**
  - Ideally, one child at a time, but this is almost never possible, so the fewer-the-better. If the manufacturer recommends capacity limitations, they must be adhered to. These will usually be on a tag or in the instruction manual, and will require that the larger and older the children, the fewer of them permitted.
  - Users should be prohibited from making contact with one another. Accidental contact should be prevented by restricting the number of users.
  - If feasible, limit users to those age six and over only. Whatever age restriction is put in place, only users of the same age, height, and weight should be permitted at the same time.
  - No flips or other maneuvers that can cause spinal injuries.
  - No shoes.
- No sharp objects inside, including earrings, necklaces, and belts.
- No toys other than those approved by the manufacturer or provider.
- Fatigued children should rest outside the bounce house.
- No playing on or atop the outside of the bounce house unless designed for it.
- Barriers for crowd control must be provided to prevent injury to the users, the observers, or to the inflatable.
- The landing area should be appropriate for the speed at which users will exit (for example, if there is a slide, the landing area should be capable of handling the highest speeds and longest distances of exit).
- Operators should sanitize and wipe down/dry the bounce surfaces periodically to prevent slippery surfaces and contamination.

**Inspection and Maintenance**
Operators and attendants should verify the conditions noted above at least once per day.

**Handling Injuries**
Have procedure in place to respond, report, and handle injuries. Proper blood borne pathogen protection, cleaning products and disposal methods should be in place to sanitize surfaces from bodily fluids.

**Insurance and Legal**
- Whether you are an operator or a user of inflatable amusements, you should obtain adequate liability insurance. Consult with your insurance agent or broker. If you are hiring a company to operate an inflatable amusement, ask them for proof of liability insurance.
- Insist that the rental company install the inflatable. If feasible, arrange for the rental company to operate the inflatable. If you are operating the inflatable, ensure all staff or volunteers are fully trained in the safe operation of each inflatable by the rental company. A minimum age of 18 is recommended for all staff or volunteers who operate inflatables.

In summary, children’s activities require a much higher degree of care from those who select, install, operate and maintain them. Because inflatable amusements are used almost exclusively by children, and because the hazards are not always apparent to parents, the degree of care that must be exercised by those who know or are expected to know the hazards is even higher. Remember, Everest Loss Control offers services to help you in your loss prevention efforts. If you would like more information about these services, visit our website at [www.everestre.com](http://www.everestre.com).