

Safe Use & Operation of Play Inflatables

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The information in this publication is intended to help ministry leaders better understand issues of play inflatables and assist them in developing a policy for their churches and related ministries. No portion of this publication should be used without prior legal review, revision and approval by an attorney licensed to practice law in your state. Mennonite Mutual Insurance Company assumes no liability for reliance upon the information provided in this publication.

Introduction

“Safe Use & Operation of Play Inflatables” has been developed to assist churches and faith-based organizations in the fight against preventable injuries from happening. The primary goal of this publication is to make you aware of the risks associated with these types of amusement rides and to help educate our current and prospective policyholders with this growing national issue.

The Underwriting and Marketing teams of Mennonite Mutual Insurance Company authored this whitepaper to provide guidance for those involved with the inspection and safe use of play inflatable devices. It lists possible hazards and outlines the precautions that should be taken to avoid them. Always read and understand your inflatable owners/operations manual. Please keep in mind that this publication is only intended to be a resource or point of reference for your use. Your church or faith-based organization is responsible for complying with all laws; state and federal. If you have concerns surrounding the use of inflatables within your organization, independent counsel should be sought for clarity on your particular situation.

If you are interested in hosting a workshop to help educate your congregation, please let us know. Our staff would be happy to help. Feel free to visit our website, www.mennonitemutual.com, for other helpful information related to churches and faith-based organizations.

Definitions

Inflatable devices: Commercial-rated equipment consisting of air-filled structures designed to allow users to bounce, slide or climb on them. They are made from flexible fabric, kept inflated by one or more blowers, and rely on air pressure to maintain their shape. NOTE: Only commercially-rated inflatables are acceptable for public use.

Controller: The person or organization having overall control including the responsibility for maintenance, of the inflatable device. (Can be a rental company)

Operator: The person over the age of 21 and appointed by the controller to be in charge of the operation of the inflatable at any time when it is intended to be available for public use.

Attendant: The person over the age of 16 and appointed to work under the control and direction of an operator to assist in the operation of the inflatable device.

Safety Critical Parts: Those parts where there is a real risk of failure that could lead to injury.

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Safe Use

Recognizing the Hazards

The following hazards have been known to occur:

- Instability and blowing away in windy conditions
- Situations caused by the loss of pressure as a result of:
 - Failure of the fabric zips and seams
 - Failure or loss of power to the blower
 - Disconnection of the blower
 - Litter or debris blocking the air intake and/or vents
- Falls from the structure
- Plastic or fabric windows tearing or detaching
- Tripping (particularly over the anchors)
- Injury to others caused by boisterous behavior, overcrowding, or not separating larger users from smaller ones
- Access to dangerous parts of machinery (e.g. inadequately protected, or unguarded blower units)
- Electrical hazards
- Inadequate means of escape in case of fire
- Lifting injuries caused by manual handling
- Injury to others caused by wearing inappropriate clothing and/or shoes
- Suffocation or entrapment

Anchoring Your Inflatable

Structures should be provided with an adequate anchorage and/or ballast system. Any anchorage points should be suitably protected where appropriate. The size, number and strength of anchorage points should be adequate for the structure and take into account likely wind loading. The designer/manufacturer should have predetermined the type of anchorage to use for each inflatable based upon maximum wind speeds. This information should be readily available.

Access/Egress

On any open side, the maximum fall-off height should be no greater than 29 ½ inches. Any hard landing surface, including grass, should be covered by a soft landing material such as a dense gym mat or equivalent material of at least ¾ inch thickness extending for a distance of at least 4 feet from the open side. Safety mats used indoors should be fire resistant. When it is necessary to have anchorage points near an entrance/exit, they should be connected in a way as to minimize the danger of tripping, abrasion or other injuries.

Blowers

These should be suitably guarded at inlet and outlet. The inflatable structure should be designed so that the user cannot come in contact with the blower unit. This may be

achieved by ensuring the length of any inflation tube is at least 4 feet when positioned on a walled side and 8 feet on any open side. Blowers should not be situated internally unless they are in a part of the structure not used for playing and out of possible contact by the user. The fitting of an auditory or visual alarm to the blower unit should be considered to alert the operator of any failure in the fan's electric (or other) power supply.

Special Considerations for Totally Enclosed Structures

In totally enclosed structures, the following additional requirements should be satisfied:

- Signs should indicate exits.
- Structures designed to accommodate more than 15 people should have more than one exit so that the inflatable can be evacuated quickly. Deflation time should be sufficient to allow the structure to be safely evacuated.
- Emergency lights should be provided as a back-up if a lighting system is installed. The discharge period for the lighting following supply failure should be sufficient to allow for the complete evacuation of the structure. Systems should be fully charged prior to use of the inflatable. Lighting should be proved each day before a totally enclosed inflatable is put into use.
- Electrical cables should be kept adequately secured away from any users or spectators.
- Electrical equipment exposed to the weather should be protected or located inside a weatherproof container or building.

Duties of Controllers or Operators

Owners or operators of devices should carry out a risk assessment of their activities to determine the control measures to avoid risk or reduce risk to acceptable levels. This will be relatively easy to do using the manufacturer's information and instructions for safe operation. The operating manual should be made readily available.

Annual Inspection

Each inflatable should be thoroughly inspected at least once every 12 months. Some states require an annual inspection. This procedure needs to be carried out by a competent person. The annual inspection should include the following:

- previous inspection reports and certificates where appropriate
- provision of a blower unit as specified by the manufacturer, or one that at least provides sufficient pressure to allow the inflatable to be used safely, suitably guarded at the air inlet and outlet
- condition of blower impeller and fan casing where practical to inspect
- condition of accessible blower electrical wiring
- condition of all electrical installations
- anchorage system for wear, rips or chafing
- type and number of ground anchors or ballast for conformity with design specification
- structure for wear or rips in the fabric
- walls and towers (when fitted) are firm and upright
- pressure is sufficient in the bouncing area and at the step/front apron to give a

reliable and firm footing

- internal ties for wear and tear, particularly at loose or exposed ends
- bed seams, wall-to-bed seams and wall-to-tower connections
- identification of the device
- if used on a fixed site, the location.

Inspection of some of these features may need to be done inside the device. The above list is not exhaustive and the manufacturer may specify additional items. Annual inspection needs to include any part of the inflatable and its ancillary equipment that may affect the safe operation of the device.

Daily/Regular Checks

Checks should be carried out daily before the first use, and periodically throughout the day. Checks should include:

- that the site remains suitable, with crowd control measures in place if appropriate
- anchorages are intact, protected where necessary, and ropes not worn or chafed
- anchor system secures the inflatable device to the ground
- there are no significant holes or rips in the fabric or seams
- the correct blower specified for the device is being used and the air pressure is sufficient to give a reliable and firm footing
- there are no exposed electrical contacts, there is no wear on electric cables, and plugs, sockets and switches are not damaged
- if an internal combustion engine is used, that the fuel cap is placed firmly on the fuel tank and any reserve fuel tank is suitable and remains in a safe position
- bolts and screws of the blower are properly secured and that robust guards are secured over the air inlet and outlet
- blower/inflation tube connection is in good condition and firmly fixed to blower
- the blower is positioned correctly, adequately protected or guarded and is not causing a tripping hazard

The public should not use the inflatable until any defects identified in the daily check have been rectified.

Maintenance

The inflatable needs to be properly maintained and the instructions contained in the operating manual should be followed. Where such instructions are not available, the controller should specify the procedures required, in conjunction with advice received from a competent person, such as the supplier or manufacturer. Details of all maintenance work on the device should be recorded in the operating manual.

Modification

Safety-critical modifications are those where failure of the modified component or system would lead to a significant risk of injury to the public, operators, or others. They could include changes in the operating parameters of a device, such as changing the height restriction of users. If in doubt, take advice from a competent person, the supplier or manufacturer.

Safe Operation

It is essential for the safe operation of a device that the manufacturer's instructions regarding the use of anchorage points be followed. The device should be secured to the ground with ground stakes, where the ground is suitable. Some equally effective methods can be used on hard standing, e.g. attaching the anchor ropes to fittings already in the ground, or to sandbags or other weights, if these are capable of taking the load.

Inflatables can be tied to a vehicle or other movable machinery, providing the vehicle or machinery is immobilized and under the control of the operator. Inflatables should not be used when the wind or gusts are in excess of the maximum safe wind speed specified by the manufacturer. The controller or operator should ensure that the inflatable device is sited well away from possible hazards such as overhead power lines or other obstacles with hazardous projections (e.g. fences). If the ground surface is abrasive, oily or dirty, a ground sheet should be used to prevent wear and tear of the base material.

The controller should determine the minimum number of attendants needed to operate the device safely, and ensure that at least these numbers of attendants are on duty when the device is in operation. In deciding how many attendants are required, the controller needs to consider matters such as the number of people using the device, the age of the users, and the type of environment in which the inflatable is being used. Attendants should be age 16 or over and the operator should be age 21 or over. If the risk assessment carried out by the controller shows that control measures are required to handle large crowds in the immediate vicinity of the inflatable, and then crowd control barriers should be provided by the controller.

The method of operation drawn up by the controller should ensure that users are admitted to the inflatable in a controlled and safe manner. In particular, the operator and attendants should carry out the following instructions:

- Ensure that users remove footwear (except socks) and any other hard, sharp or dangerous objects (such as buckles, pens, purses, badges etc.). Glasses should be removed.
- Do not allow users to consume food or drink or chew gum on the device.
- Do not allow users to obstruct the entrance or exit of any inflatable device. Do not allow anyone to play on the step or front apron of a bouncy castle.
- Do not allow users to climb or hang on the walls.
- Do not allow users who do not conform to height restrictions to use the device.
- Keep the entrance/exit areas clear of onlookers so that the operator or attendant has a clear view and can ensure that users enter/exit safely.
- Keep users off the device when it is being inflated or deflated. Deflate the device when not in use.
- The operator and attendants should watch the activity on the inflatable constantly. They should use a whistle or other signal and take action at the first sign of any misbehavior. Somersaults and rough play should not be allowed.
- It is the operator's responsibility to ensure that the equipment is not overloaded with users. Larger, more boisterous users should be separated from smaller ones. The number of users at any one time should be limited to allow each user enough room to play safely.

Training

The controller should ensure that all operators receive effective training in the working of the device including:

- the method of operating the device
- safe methods of assembly/dismantling, where applicable
- how to make a daily check
- safe entry/exit for users
- safe anchoring of the inflatable
- crowd control measures, and barriers
- measures to be taken in the event of power failure
- procedures for reporting accidents, defects or breakdowns.

Accident Reporting

Deal with any injuries first, but then report the event after the incident. Reportable accidents which cause injury, including acts of violence and certain dangerous occurrences, should be notified to the enforcing authority by the responsible person (who is likely to be either the controller or operator).

What to do if Defects are Found

If at any time a defect is found which could possibly lead to danger, the public should not be allowed to use the device until the cause has been identified and remedied. This may include checking all similar components. If there is any doubt about continued safety, the device should not be used until a competent person, supplier or manufacturer has confirmed that it is safe to do so.

Buying & Selling Inflatable Devices

Inflatable devices should not be bought or sold unless the following documentation is available:

- a declaration by the manufacturer that the inflatable has been manufactured to an appropriate design and in an appropriate manner
- an operating manual, which includes:
 - any limits on numbers of users
 - details of weather conditions in which the inflatable should not be used
 - details of how to set up the inflatable
 - anchorage arrangements
- details of any routine maintenance or inspection required
- specification of mats used to protect entrance and exit points
- appropriate daily checks (if available)

The operating manual can also be a good place to keep records of maintenance, modifications, daily checks and annual inspections. The controller of a newly acquired second-hand device should ensure that the operations manual is present and complete. The records of maintenance, modifications and inspections should accompany any second-hand device.

Sources

“HSE says: safety checks on inflatables must be carried out properly” *HSE (Health & Safety Executive)*. May 15, 2009. www.hse.gov.uk/press/2009/coiwm41109.htm

BS 7671: 1992 *Requirements for Electrical Installation. IEE Wiring Regulations* (Sixteenth edition).

BS EN 60529: 1992 *Specification for Degrees of Protection Provided by Enclosures* (IP Code).

BS EN 60204 -1: 1992 *Safety of Machinery. Electrical Equipment of Machines Part 1. Specification for General Requirements*.

Fairgrounds and Amusement Parks: Guidance on Safe Practice HSG175 HSE Books 1997 ISBN 0 7176 1174 4.

Ohio Department of Agriculture-Amusement Ride Safety Division
www.agri.ohio.gov/divs/rides/default.aspx

State Specific Information

It is important that you review the specific laws that pertain to your state.

There are organizations, resources, and other helpful websites in the area of inflatable safety. Please be advised that we are not endorsing these websites or organizations. Some have a theology or philosophy that may or may not align with Mennonite Mutual Insurance Company, your church or faith-based organization. Use discernment when looking into these sites and organizations.

Indiana: *There are not any licensing or inspection requirements currently for this state.*

Ohio: *If a church plans to own or rent an inflatable bounce house or similar attraction, it must be DESIGNED for commercial use according to the standards of the American National Standards Institute (ASTM), which the State of Ohio adopts for eligibility. If a church has an eligible commercial rated inflatable, it is then subject to a fee and inspection by the State of Ohio. For more information visit: www.agri.ohio.gov/divs/rides*

Pennsylvania: *There are not any licensing or inspection requirements currently for this state.*

*While every effort has been made to ensure the accuracy of the references listed in this whitepaper, their future availability cannot be guaranteed.

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