



FAQs: Playground Surfaces

Playgrounds and play areas are found everywhere in the United States, as well as throughout the world. These areas are designed to support children as they learn, play, and grow. However, much is still unknown about the environmental health hazards associated with different types of surfacing for playgrounds. There is research being done on crumb rubber and other types of synthetic surfaces, but this work is still in its early stages. This FAQ will provide you with information to make informed decisions about what playground materials are best for children.

What are the different types of Surface Materials?

The seven most common surface/filler materials for playgrounds are:

- Sand
- Pea gravel
- Bark mulch/ woodchips
- Engineered wood fiber
- Crumb rubber
- Tiles
- Poured in place

Each surface material has benefits as well as health concerns, specifically with regard to maintenance and ASTM (the American Society for Testing and Materials) impact standards. [ASTM](#) is the world's largest source of standards for materials, goods, services and systems. ASTM also published information on sampling and testing methods for health, safety and performance aspects of materials, effects of physical and biological agents and chemicals and, safety guidelines. ASTM provides guidance on the depth of fill material for playgrounds to ensure children are protected.

What should I know about these materials before choosing or allowing children to play on one?

Sand

Benefits

- Inexpensive
- Easy to install
- Provides good impact absorption
- Does not easily support microbial growth

Disadvantages

- Hard to use with ADA mobility devices, such as wheelchairs
- May contain asbestos or silica
- Easily consumed by young children
- Easily be tracked inside on clothes, hair, shoes, etc.
- Can hide insects and other pests
- Requires constant maintenance, for example- inspection for foreign objects and raking.

Overall Health Concerns:

A primary danger associated with playground sand is the possible presence of asbestos and silica. Silica can cause asthma and inflammation of the lungs, while asbestos fibers can cause cancer.

Pea Gravel

Benefits

- Inexpensive
- Easy to install
- Provides good impact absorption
- Does not easily support microbial growth
- Relatively unattractive to insects
- Drains more easily than sand

Disadvantages

- Hard to use with ADA mobility devices, such as wheelchairs
- May contain asbestos or silica
- Easily consumed by young children
- Easy to place in open body parts: nose, mouth, and ears
- Can hide insects and other pests
- Requires constant maintenance, for example
 - inspection for foreign objects and raking

Overall Health Concerns:

Pea gravel may contain foreign objects harmful to children's health such as sharp twigs and stones as well as other hazards. More research regarding the environmental and health hazards associated pea gravel is needed.

Bark Mulch/ Woodchips

Benefits

- Inexpensive
- Easy to install
- Provides good impact absorption
- Has a natural feel

Disadvantages

- Hard to use with ADA mobility devices, such as wheelchairs
- May contain asbestos or silica
- Easily consumed by young children
- Easy to place in open body parts: nose, mouth, and ears
- Can hide insects and other pests
- Requires constant maintenance, for example
 - inspection for foreign objects and raking
- May contain allergens and toxins if the source of these materials isn't checked
- Can hide insects, pests, and foreign matter
- Microbial growth can occur when material is wet

Overall Health Concerns:

Mold can grow on untreated wood. It is also possible that the wood chips may be treated with Copper Chromated Arsenic (CCA), a wood preservative and insecticide that can contain up to 30% arsenic. Though the toxic wood preservative was phased out of use in 2004, these wood chips may still be present, as many are recycled and used again in newer playgrounds. It is important to check the source of all wooden playground equipment and playground surface material. For more information on CCA visit our [CCA FAQ](#).

Crumb Rubber

Benefits

- Easy to install
- Provides better impact absorption than the preceding materials

Disadvantages

- Hard to use with ADA mobility devices, such as wheelchairs
- May contain asbestos or silica
- Easily consumed by young children
- Easily get in shoes, socks, clothing, and crevices of the body and tracked inside
- Expensive maintenance cost

Overall Health Concerns:

Crumb rubber is made out of recycled tires. Tires contain black carbon - a known carcinogen - and emit volatile organic compounds (VOCs), especially when subjected to heat. For more information on Crumb Rubber (and Artificial Turf) visit our [FAQ](#).

Engineered Wood Fiber (EWF)

Benefits

- Easy to install
- Provides good impact absorption
- Stays in place better than loose fill materials

Disadvantages

- Made from completely new wood
- Can hide insects and other pests
- Microbial growth can occur when material is wet
- More expensive than woodchips
- Expensive maintenance costs

Overall Health Concerns:

Mold can grow on untreated wood. It is also possible that the wood chips may be treated with Copper Chromated Arsenic (CCA), a wood preservative and insecticide that can contain up to 30% arsenic. Finally, EWF often contains formaldehyde and other volatile organic compounds (VOCs), to adhere the wood fibers together. For more information on CCA visit our [CCA FAQ](#).

Poured in Place (PIP)

Benefits

- Easy to use with ADA mobility devices, such as wheelchairs.
- Provides great impact/shock absorption.
- Provide consistent impact absorption – therefore a good longer term option.
- Animals do not find this material appealing.
- Generally low maintenance costs over time.
- Easily repaired.

Disadvantages

- Expensive to install
- Must be kept clean and swept regularly
- Requires professional set up

Overall Health Concerns:

PIP playground surface material can be made of recycled tires among other materials. Tires contain black carbon - a known carcinogen - and emit VOCs, especially when subjected to heat.

Tiles

Benefits

- Easy to use with ADA mobility devices, such as wheelchairs
- Provides better impact/shock absorption than the preceding materials
- Provide consistent impact absorption – therefore a good longer term option
- Animals do not find this material appealing
- Generally low maintenance costs over time

Disadvantages

- Expensive to install
- Must be kept clean and swept regularly
- Requires professional set up

Overall Health Concerns:

Tiles can be made of recycled tires among other materials like natural tree rubber or other synthetic rubbers. Tires contain black carbon - a known carcinogen - and emit VOCs, especially when subjected to heat.

What is currently being done about playground surface material hazards?

Currently 16 states have policies in place that regulate how playgrounds are built and to what standards - all or part of the CPSC, the U.S. Consumer Product Safety Commission and/or ASTM. These states are: Arkansas, California, Connecticut, Florida, Illinois, Michigan, New Jersey, North Carolina, Oklahoma, Oregon, Rhode Island, Tennessee, Texas, Utah, Virginia, and Wyoming.

Many of these laws have provisions to not use state or local funds for building playgrounds unless certain requirements are met. New York City has banned the use of crumb rubber from all recreational areas in the future. A bill in Connecticut that has been approved by the planning and development committee, would impose a moratorium on all rubber surfacing materials until clearer guidelines from the EPA and federal government becomes available. California and Minneapolis are also considering imposing bans on crumb rubber for use in playground surfaces and artificial turf fields.

If you do not see your state on this list, take action! Meet with or call your local representatives to express concern regarding the unsafe surface materials you see being used in your local community. Let's work together to demand action to protect children's environmental health.

What can you do?

1. Make sure to **never leave children unattended** while playing on a playground. They could ingest surface material, or hurt themselves otherwise.
2. **Wash children's hands** immediately after they spend time on a playground. This will get rid of any chemicals or heavy metals from crumb rubber, dirt (possible source of [lead!](#)) and sand, as well as bacteria and foreign objects.
3. Make sure that the surface material meets the recommended depth guidelines from ASTM for the specified equipment. In general, surface fill material must be **at least 12 inches deep** for adequate shock absorption. For a more detailed list of requirements please visit the Resource links provided below.
4. **Follow the Research** about playground surfacing materials. New information is being released every day, and it is important to stay on top of it to keep children safe and healthy!

Resources

Children and Athletes at play on toxic turf and playgrounds

<http://www.stopcancerfund.org/pz-environmental-exposures/caution-children-at-play-on-potentially-toxic-surfaces/>

Comparative performance of playground surfacing materials including conditions of extreme non-compliance

<http://injuryprevention.bmj.com/content/injuryprev/10/3/174.full.pdf>

Is Pea Gravel or Rubber Mulch Safer for Playgrounds?

<http://www.braenstone.com/2016/08/pea-gravel-nj/>

Playgrounds and Toxic Threats- Healthy Schools Network, Inc.

<http://www.healthyschools.org/HSNPlaygrdGuide.pdf>

Public Playground Safety Handbook

<https://www.cpsc.gov/s3fs-public/325.pdf>

Safe Playgrounds Reducing the Risk

<https://www.markelinsurance.com/-/media/specialty/risk-management/safety-guides/safe-playgrounds-tip.pdf?la=en&hash=888F65C74A9837CE6236CD4C7E3352DD5A9237A8>

State Regulations- National Program for Playground Safety

<http://playgroundssafety.org/standards/regulations>

Testing the impact attenuation of loose-fill playground surfaces

<http://injuryprevention.bmj.com/content/6/2/141.long>

What Kind of Mulch to Put in a Children's Playground?

<http://homeguides.sfgate.com/kind-mulch-put-childrens-playground-94969.html>