



Agenda Item D.1
DISCUSSION/ACTION ITEM
Meeting Date: April 3, 2018

TO: Mayor and Councilmembers

FROM: Vyto Adomaitis, Neighborhood Services and Public Safety Director

CONTACT: JoAnne Plummer, Parks and Recreation Manager

SUBJECT: Determination of Playground Surface Materials for Andamar, Berkeley, Winchester I and Winchester II Parks

RECOMMENDATION:

- A. Authorize the use of a unitary surface for the playground renovations at Andamar, Berkeley, Winchester I & Winchester II Parks; or
- B. Authorize the use of manufactured wood fiber for the surface of the playground renovations at Andamar, Berkeley, Winchester I & Winchester II Parks; or
- C. Provide additional direction to staff.

BACKGROUND:

In recent years, the use of crumb rubber and recycled rubber in athletic fields and in playground surfaces has resulted in many questions related to the potential health risks to children. The questions have resulted in numerous studies by businesses, government agencies and private organizations. The studies have focused primarily on the exposure and the inhalation of loose crumb rubber used as infill in synthetic athletic fields. There have also been studies that have included the evaluation of the unitary surfacing materials, such as the Pour in Place product and rubber tiles. Unfortunately, while there have been some findings on the loose crumb rubber, there have not been conclusive findings on the unitary surface materials. These studies will be considered further in the discussion section of this report.

In the FY 2017/18 and 2018/19 budget, there are six capital improvement projects that are focused on playground improvements and ADA accessibility. Four of these projects are ready to move forward, but a determination needs to be made on the type of playground surfacing material to be used in these renovations. This decision will also impact the award of bid for the construction of Hollister/Kellogg Park since the specifications for the project include engineered wood fiber with the unitary surface as a bid alternate. For the City Council's convenience, Staff has included product definitions and images as part of this staff report (Attachments 1 and 2).

DISCUSSION:

Outdoor playgrounds are critical assets to promote physical activity. The choice of surface materials can affect the safety, usability and cost of maintaining the play area. Additional factors to consider when making decisions about surfacing materials include: concentration of use; durability; minimum required depths; fall height; initial installation and ongoing costs; maintenance; and replacement. It is important to note that all surfacing materials have benefits and challenges when considering the multiple factors for determining the best product for use.

The City of Goleta puts safety of children at the top of its priorities when considering playground development, usability, cost, and maintenance. Staff follows guidelines set forth by the U.S. Consumer Product Safety Commission (USCPSC), and for the purpose of this report, has gathered information from a variety of sources, to include the *2016 Status Report from the Federal Research Action Plan on Recycled Tire Crumb Used on Playing Fields and Playgrounds*. The USCPSC's studies of recycled tire materials used in playground surfacing per the Federal Research Action Plan seek to improve understanding of potential chemical hazards to children using playgrounds.

In 2016, the USCPSC began several activities to gather information about the chemical safety of the recycled tire materials in playground surfacing. As described in the Federal Research Action Plan, the USCPSC joined its partner agencies, Environmental Protection Agency (EPA) and Agency for Toxic Substances and Disease Registry (ATSDR), in the general activities of the recycled tire crumb rubber research efforts, which included:

- Conducting data knowledge gap analysis
- Reaching out to key stakeholders
- Characterizing the chemical composition of recycled tire crumb rubber
- Characterizing human exposures to recycled tire crumb rubber

The Federal Research Action Plan includes data collection efforts by the Federal partners, which would support future risk assessments of recycled tire crumb rubber used in fields and playgrounds. However, the partner agencies have not yet determined whether comprehensive risk assessments of recycled tire crumb rubber used in fields and playgrounds will be needed to determine if there are human health risks.

Unfortunately, not all of the studies were conducted in the United States, so staff are unsure of the product quality standards for those regions where materials were tested. However, the California Office of Environmental Health Hazard Assessment (OEHHA) did conduct a skin sensitization assay of three recycled rubber playground surfaces, using Guinea pigs as the test animals. The researchers concluded that *"playground surfaces made of recycled tires do not constitute a skin sensitizing risk to children."* Also in 2007, a wipe sampling method was used to estimate the chemicals that might be transferred to a child's hand through contact with a unitary playground surface made of recycled waste tires.

While the authors of this study acknowledged that many of the uncertainties in their assumption used in their modeling could overestimate or underestimate actual health risk, the conclusion was *“none of the chemical exposure from hand-to-mouth contact from recycled tire playground surfacing raised concerns about the health effects in children”*.

The Federal Research Action Plan did identify the need to further study Exposure Characterization for Recycled Tire Material on Playgrounds. The OEHHA studied this in 2007 using exposure models to estimate children’s oral exposure from hand to mouth contact. While the study may be helpful to a determination, it is limited in scope because the studies only assessed oral exposures. Children on playgrounds can be exposed to materials by oral, dermal, and inhalation (when loose fill is used). The report concludes, “To estimate the exposure of children to recycled tire rubber constituents on playgrounds, the USCPSC will require the chemical characterization and bioavailability results that are currently being collected by the EPA and ATSDR under the Federal Research Action Plan. No exposure modeling for playgrounds can be completed until these data are available. Meanwhile, the USCPSC is gathering data that will inform the behavioral exposure factors and activity patterns.

Surface Options

Options available for surfacing around children’s play areas and under playground equipment include loose fill materials and unitary surfacing materials.

1. Examples of loose fill materials: organic fill composed of coconut fiber; cork and rice husk blend; wood products such as engineered wood fiber; pea gravel; sand, shredded/recycled rubber mulch; wood mulch (not CCA treated); and traditional wood chips. *CCA = chromated copper arsenate.
2. Examples of unitary surfacing materials include: “poured-in-place” rubber surfacing or any combination of energy-absorbing materials held in place by a binding agent and cured to create a unitary shock absorbing surface.

The primary purpose for safety surfacing is to reduce the likelihood of life threatening head injuries. The American Society for Testing and Materials (ASTM) has released over 12,000 standards used around the world to improve product quality, enhance safety, facilitate market access and trade and build consumer confidence. The USCPSC references ATSM F1292 for impact attenuation testing and ASTM F1951 for Americans with Disability Act (ADA) accessibility guidelines for firmness and stability.

Upon incorporation, the playgrounds in Goleta had sand as their surface. As playgrounds have been renovated, the sand has been replaced with a poured in place unitary surfacing. The reason for the change is related to accessibility, safety and maintenance. Sand is not considered an accessible surface for individuals with disabilities. Moreover, sand is not considered an appropriate safety surface for equipment that is over four feet high, according to the Public Playground Safety Handbook by the USCPSC. According to ASTM safety standards, a playground would have to maintain nine inches of loose sand to accommodate a play structure that had a fall height of four feet or less. Playgrounds with sand require daily monitoring for organic and inorganic debris, raked

regularly to reduce the compaction and replaced on an as needed basis to maintain the nine inches of loose sand.

For the playground renovations, Staff held two community meetings and released a survey asking the residents what type of equipment they would like to see in these parks. The results for every park revealed that the style of equipment requested has a fall height that exceeds four feet. For this reason, Staff is recommending either a unitary product, such as pour in place, or engineered wood fiber be used. Both of these products provide accommodation for accessibility, provide the highest rating for fall height and are an industry standard nationwide.

The maintenance and costs of these two products differ. The unitary product is more expensive to install, but can be easily maintained. Debris can be blown or swept off in most cases, and can be cleaned and sanitized as needed. The unitary product can cost three to four times more at installation than engineered wood fiber. The engineered wood fiber is a less expensive cost for installation, but does require regular raking to reduce compaction as well as replenishment of materials to maintain the depth of nine inches. Regular raking would be weekly at a minimum, but a high use park could require daily raking to maintain compliance of depth of product. Additionally, some forms of debris can be difficult to see (animal droppings, needles, etc.), creating a potential hazard for users.

Staff has attempted to evaluate all related information on playground surface studies conducted in the United States and will continue to monitor progress on current and future studies. When it comes to playground surfacing, either of the recommended surfaces are commonly used nationwide and there is no data confirming that one is better or worse with regard to the health and safety of children. Staff contacted the California Joint Powers Insurance Authority (CJPIA), the City's liability insurance carrier, for an opinion between the two recommended surfaces for safety standards. The Authority did not offer a formal opinion on which type of surfacing to use, only that one be used that meets the GMAX and Head Impact Criteria (HIC) as outlined in the ASTM standards. Consistent within this report, they offered that engineered wood fiber and poured in place (unitary) surfacing, properly installed and maintained at the prescribed depths, will provide the impact attenuation properties needed.

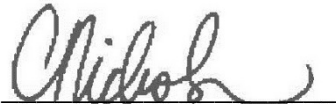
FISCAL IMPACTS:

There are no immediate fiscal impacts to this determination. Project by project, costs vary. Staff will bring the fiscal impacts of each project to Council at the time of award of contracts.

ALTERNATIVES:

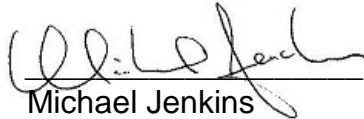
The Council may elect not to make a determination on playground surfacing materials at this time. No determination would delay the renovation of the four playgrounds listed, as well as have a potential impact to the construction of Hollister/Kellogg Park and two other playgrounds scheduled and funded for renovation.

Reviewed By:



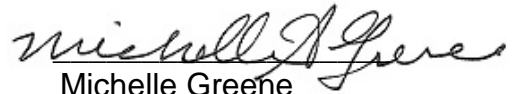
Carmen Nichols
Deputy City Manager

Legal Review By:



Michael Jenkins
City Attorney

Approved By:



Michelle Greene
City Manager

ATTACHMENTS:

1. Playground Surface Product Definitions
2. Images of Playground Surfacing

ATTACHMENT 1

Playground Surface Product Definitions

PLAYGROUND SURFACE PRODUCT DEFINITIONS

PRODUCT	DEFINITION
Crumb Rubber	Granulated rubber made from recycled tires to form small, uniform pellets. Tires are broken up by grinding or freezing; steel and other fibers are almost entirely removed in the manufacturing process. One common use for crumb rubber is as filler in synthetic turf fields.
Tire Mulch	Shredded rubber made from recycled tires and is similar in size to traditional wood chips. One common use for tire mulch is as surface covering around children's play areas and under playground equipment.
Organic Infill	Composed of plant-derived materials, often made of coconut fiber, cork and rice husk blend that is recyclable, organic, claims to be chemical free, and may require more frequent maintenance and replacement as the infill decomposes.
Engineered Wood Fiber (EWf)	Made from 100% virgin wood fiber which is not chemically treated. WEF products are designed specifically for use as a playground safety surface.
Grass and dirt	Not considered protective surfacing especially in playground construction because wear and environmental factors reduce their shock absorbing effectiveness. Athletic/sports fields using dirt and grass have additional challenges with regard to weather, durability and maintenance.
Wood mulch and wood chips (Not CCA treated*)	Compresses at least 25% over time due to use and weathering, require greater depth for safety, frequent maintenance to ensure surface levels never drop below the minimum depth, and are subject to standing water and freezing in winter. *CCA = chromated copper arsenate
Pea Gravel and Sand	These do not provide suitable fall protection when considering fall height. At one time, these products were the primary product for playground surfacing, but fall protection studies and waste materials deposited by animals have justified making changes.
Unitary surfacing materials	"Poured in place" rubber surfacing consists of rubber mats and tiles or combination of energy-absorbing materials held in place by a binder that may be poured in place at the playground site and then cured to form a unitary shock absorbing surface. Unitary materials are available from a number of different manufacturers, many of whom have a range of materials with differing shock absorbing properties.
Playground	As defined by CPSC is a designated area intended for recreational play that includes engineered recreational equipment including, but not limited to, climbing structures, swings, slides, seesaws. Many modern playgrounds have structures that integrate multiple pieces of playground equipment.

ATTACHMENT 2

Images of Playground Surfacing

ATTACHMENT 2 IMAGES OF PLAYGROUND SURFACING

POUR IN PLACE UNITARY SURFACE



MANUFACTURED TILES UNITARY SURFACE



MANUFACTURED WOOD FIBER

(Wood Chips made from 100% virgin wood fiber from only the interior of the tree)

