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Both the Selectmen and the Medway Public School Committee reached a decision to allow the use of crumb rubber as infill for synthetic turf fields (STFs). That decision was based on a review of then existing data sets provided by state and national organizations and the crumb rubber industry over the previous decade. In the last year, the Board of Health of the Town of Medway (Board) was asked to examine the health issues related to crumb rubber infill and examined these studies and requested additional studies from the U.S. Consumer Product Safety Division. It has also held multiple hearing regarding the issue since October 2014. A response by the Board to those concerns is available in a memo to all concerned individuals.

Fact Sheet on Synthetic Turf Used in Athletic Fields

STFs using crumb rubber have been installed and used in three athletic fields in Medway and elsewhere in the United States and the world. Currently Medway Public Schools and Parks have 13 athletic fields, three composed of synthetic turf material, and ten composed of normal turf and no additional fields that may be converted to synthetic turf fields. Questions have been raised about potential health, safety, and environmental effects from the use of synthetic turf, especially in developing children who use them. The following fact sheet was prepared by the Town of Medway Board of Health in consultation with the Board of Selectmen, Department of Public Services (including Parks and Environmental Services), Medway Public Schools and Public School Committee, and concerned citizens to provide information on current 'research' studies.

Q: Why is synthetic turf used in Medway, Massachusetts?
A: In 2013, The Town of Medway (Medway) developed a '*Parks and Athletics Master Plan*.' During that work, it was determined that Medway had an insufficient number of rectangular athletic fields. Many of Medway's fields at that time were unusable due to excessive use. It was found that equal use of one synthetic field equated in time to the use of two natural turf fields because there was no need to rest the synthetic field and allow them to rejuvenate. By replacing the existing STF at Hanlon Field (Medway High School, 88 Summer Street) with new synthetic turf and installing two additional STFs, Medway is now able to adequately meet the multi-purpose needs for such rectangular fields.

Q: What are synthetic turf fields made of?
A: Components of STFs include artificial grass fibers (blades), crumb rubber infill, and sand infill overlaid on a carpet-like backing that holds the turf together. The grass fibers

are typically made of nylon, polyethylene, or polypropylene. The crumb rubber infill used to soften the surface is most often made of recycled tires.

Q: What chemicals can be found in the synthetic turf crumb rubber?
A: The crumb rubber used in STFs is mainly composed of recycled tires, which contain man-made and natural rubber. Based on reviews of research studies and reports, certain chemicals have been identified in crumb rubber. Components of STFs, such as crumb rubber infill, have therefore been found to contain various chemicals including semi-volatile organic compounds including polycyclic aromatic hydrocarbons or PAHs), volatile organic compounds (VOCs), and heavy metals such as *zinc, iron, manganese and lead*. Although lead is found in some artificial turf blades (or fields?), Medway is in possession of a certificate from the manufacturer stating that there is no lead in Medway's STF's.

Q: Can people be exposed to the chemicals found in crumb rubber?
A: Yes, but the studies to date on the release of chemicals from crumb rubber have reported very low concentration of chemical exposure. Although the potential for health effects due to exposure to chemicals in crumb rubber is very low, there are three possible ways for people to have contact with these chemicals on artificial turf fields:

- Accidentally ingesting small amounts of crumb rubber by putting fingers in the mouth or not washing hands before eating after playing on the fields
- Breathing in dust and vapors while playing on the fields. Crumb rubber may become dust as it wears and the rubber may give off some vapors.
- Direct skin contact with the crumb rubber.

Q: Are any health effects associated with these chemicals found in synthetic turf crumb rubber?
A: The health and safety aspects of synthetic turf have been reviewed and addressed by many national and state organizations, including the U.S. Environmental Protection Agency, the Centers for Disease Control and Prevention, and numerous state agencies in California, Connecticut, New Jersey, and New York. They generally conclude that health effects are unlikely from exposure to the levels of chemicals found in synthetic turf and that these fields do not pose a serious public health concern. Specifically, a review of the available information on crumb rubber by the New York Department of Health indicates that ingestion, dermal, or inhalation exposures to chemicals in or released from crumb rubber do not pose a significant public health concern.

A multi-agency report from the State of Connecticut concluded that the use of outdoor and indoor artificial turf fields is not associated with elevated health risk. Studies and reviews conducted by the California Office of Environmental Health Hazard Assessment found that synthetic turf fields do not represent a serious human health risk with regard to the inhalation of chemicals or particulates above these fields. These studies indicate that at much higher levels, these chemicals can cause serious health effects. Some PAHs may pose a cancer risk for people exposed to high levels for long periods. VOCs can cause eye, nose, throat, and skin irritation. <u>In young children, exposure to lead may cause learning and behavioral problems and lowered intelligence.</u>

Q: Can people be exposed to these chemicals from other sources?
A: The PAHs and VOCs found in crumb rubber are very common in our environment. People can be exposed by breathing or eating or by getting dirt or dust on their skin. Rubber dust from car tires is a source of urban air pollution and soil pollution. PAHs are present in exhaust, smoke, soot, urban soil and charbroiled foods. VOCs are released into the air from gasoline, paint, building materials and many other sources. Lead is commonly found in soil and dust in the urban environment because, in the past, it was used in paint, gasoline and many other products.

Q: Does the heat generated by synthetic turf pose a health risk to users?
A: Like asphalt, the crumb rubber in synthetic turf fields absorbs heat from the sun and gets hotter than dirt or natural grass. On hot days, some synthetic turf fields may be too hot to play on. To protect yourself from the heat, health officials have recommended that you take the following precautions: drink lots of water, wear light and loose fitting clothes, always wear shoes, take breaks often, and exercise moderately. If you experience symptoms of heat related illness, such as dizziness, weakness, headache, nausea, vomiting or muscle cramps, move to a shaded area, drink water and rest. Seek medical attention if you do not feel better. It is especially important that adults supervising children take precautions on hot days.

Q: Are people who play on synthetic turf fields at risk of bacterial skin infections?
A: A multi-agency report to the California state legislature stated that the number of skin abrasions suffered on synthetic turf fields was greater than on natural turf fields, but the severity of the abrasions did not differ. The report found that synthetic turf fields harbor fewer bacterial species and a smaller number of live bacteria than natural turf fields. Moreover, bacterial skin infections [*e.g.*, *methicillin-resistant S. aureus* (MRSA), were not shown/proven to be caused by contact with synthetic turf fields. Such infections among athletes are due mainly to physical contact and sharing contaminated towels or sports equipment.

Coaches and players should be aware of the potential for MRSA transmission and infection among athletes:

- All skin cuts or abrasions should be washed with soap and water and covered immediately.
- School athletic departments and sports leagues, should use good hygienic practices.
- Sharing of towels and equipment that rubs against bare skin should be prohibited.

Q: Should people continue to use synthetic turf fields with crumb rubber?
A: Regular physical activity is one of the most important parts of a healthy lifestyle. Synthetic turf fields allow access to open spaces for sports and physical activities. After any outdoor activity health organizations recommend that people should wash their hands before eating or drinking. On very hot days, users should limit activities, take rest breaks and drink water.

Playing on synthetic turf fields with crumb rubber infill is debatable. The Consumer Product Safety Division has withdrawn their support for prior studies that should unequivocal safety. While it continues to be used in many locations, alternatives are available. Additional hearings and research are occurring nationwide. At present it remains an individual choice as to whether one should of should not play on such fields.

Q: What preventive measures can be taken to further reduce potential health and safety concerns of synthetic turf fields?
A: The following hygiene should be followed:

- WASH hands after using the field, especially before eating;
- DO NOT eat while on the field;
- REMOVE outer uniforms at the field or immediately upon returning home; and
- MONITOR for potential heat-related illness are recommended measures for minimizing potential risks associated with synthetic turf fields.

Q. Will signage be posted on Medway Athletic Fields to indicate what precautions should be taken when playing on the fields?

The Medway Board of Health has recommended that such signage be posted.

Q: Are there alternative to Crumb Rubber Infill on synthetic turf fields?
A: Yes. The use of organic infill (*e.g.,* coconut fiber and cork) appears to be a better choice to avoid the problems noted with or suspected to be associated with crumb rubber infill. But not all of the new suggestions are without problems. The use of other rubber products (sneaker soles) has been suggested but the content of such products is not available.

Q: Where can I get more information?
A: The following links provide additional information and details on the health assessment of synthetic turf fields:

- New York City Department of Health Air Quality Survey Of Synthetic Turf Fields
- New York City Department of Health Review of the Potential Health and Safety Risks From Synthetic Turf Fields
- New York State Health Department Crumb-Rubber Infilled Synthetic Turf Athletic Fields Fact Sheet
- California Department of Resources Recycling and Recovery Report to the Legislature on Health Impacts of Outdoor Artificial and Natural Turf Fields
- U.S. Environmental Protection Agency Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds
- Greenplay – Naturally Safe Organic Infill

Sincerely,

Board of Health Members: _____
Michael J. Heavey, Chairman

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John A. Mill III, Clerk

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Jordan E. Warnick, Ph.D, Member

Dated: December 14, 2015