



Public Employees for Environmental Responsibility

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Information Quality Guidelines Staff (Mail Code 2811R)
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460

Re: Demand for Correction under the Information Quality Act: 2009 Study regarding Synthetic Fields and Playgrounds

To Whom It May Concern,

Public Employees for Environmental Responsibility (PEER) hereby submits this Request for Correction under the Information Quality Act (IQA) of 2000 [Section 515 of the Fiscal Year 2001 Treasury and General Government Appropriations Act, Pub. L. No. 106-554],¹ the Office of Management and Budget (OMB) Guidelines for Ensuring and Maximizing the Quality, Utility, and Integrity of Information disseminated by Federal Agencies (hereinafter “OMB Guidelines”),² and the Environmental Protection Agency’s (EPA) Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency.³

In 2008 the EPA’s Tire Crumb Science Workgroup proposed and designed a small study to “evaluate a protocol and methods for generating consistently collected U.S. Environmental data for select tire crumb constituents.”⁴ The workgroup published their findings in a 2009 study titled, *Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds*.⁵ This study found that the concentrations of Particulate Matter (PM₁₀) and metals, including lead, measured in the air directly above the synthetic turf fields were of the same concentration as in areas measured upwind from the fields.⁶ However, concentrations of PM₁₀ and metals at the

¹ Treasury and General Government Appropriations Act, Pub. L. No. 106-554, §515 (Fiscal Year 2001).

² Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, Republication, 67 Fed. Reg. 8452 (Feb. 22, 2002).

³ U.S. ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR ENSURING AND MAXIMIZING THE QUALITY, OBJECTIVITY, UTILITY, AND INTEGRITY OF INFORMATION DISSEMINATED BY THE ENVIRONMENTAL PROTECTION AGENCY, available at http://epa.gov/quality/informationguidelines/documents/EPA_InfoQualityGuidelines.pdf [hereinafter *EPA Guidelines*].

⁴ NATIONAL EXPOSURE RESEARCH LABORATORY, U.S. ENVIRONMENTAL PROTECTION AGENCY, A SCOPING-LEVEL FIELD MONITORING STUDY OF SYNTHETIC TURF FIELDS AND PLAYGROUNDS (2009) [hereinafter *Study*].

⁵ Study, xv.

⁶ Study, xv.



playground site with high play activity were higher than those measured upwind from the playground.⁷ All PM₁₀ and lead air concentrations were below their respective National Ambient Air Quality Standards (NAAQS).⁸ The study also found that all Volatile Organic Compounds (VOCs) were measured at concentrations typical of ambient air concentrations⁹ however, methyl isobutyl ketone was detected in one field sample.¹⁰

The EPA concludes its findings saying that “on average, concentrations of components monitored in this study were below levels of concern; however, given the very limited nature of this study...and the wide diversity of tire crumb material, it is not possible to reach any more comprehensive conclusions without the consideration of additional data.”¹¹

PEER respectfully submits this administrative demand for correction that the EPA rescind and correct online print information regarding the safety of artificial turf in its 2009 study *Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds*¹² (hereinafter “Study”) on the basis that it contains inaccurate, incomplete, and unreliable information.

The EPA Information Quality Guidelines state that “Disseminated information should adhere to a basic standard of quality, including objectivity, utility, and integrity.”¹³ PEER challenges the objectivity of such disseminations of information related to artificial turf released in July of 2009. The Study is based on inaccurate, incomplete, and unreliable information regarding the potential risks to human health and the environment of exposure to recycled tire crumbs used in artificial turf.

Due to the potential harms to human health and the environment caused by the use of recycled tire crumbs in artificial turf, PEER demands that the EPA rescind its report regarding the safety of artificial turf. Moreover, PEER strongly urges the EPA to conduct a more thorough study of such risks prior to releasing information to the public.

The Study is the only significant study that the EPA has conducted on the safety of artificial turf. As such, the Study has a significant potential impact on further private and public decisions relating to the use of artificial turf and the management of scrap tires. Given the

⁷ Study, xv.

⁸ Study, xv. The NAAQS for PM₁₀ is 15 µg/m³. The NAAQS for Lead is 0.15 µg/m³. *Id.*

⁹ Study, xv.

¹⁰ Study, xv. “Methyl isobutyl ketone is used as a solvent for gums, resins, paints, varnishes, lacquers, and nitrocellulose. Acute (short-term) exposure to methyl isobutyl ketone may irritate the eyes and mucous membranes, and cause weakness, headache, nausea, lightheadedness, vomiting, dizziness, incoordination, narcosis in humans. Chronic (long-term) occupational exposure to methyl isobutyl ketone has been observed to cause nausea, headache, burning in the eyes, weakness, insomnia, intestinal pain, and slight enlargement of the liver in humans.” *Methyl isobutyl ketone*, ENVIRONMENTAL PROTECTION AGENCY, <http://www.epa.gov/ttnatw01/hlthef/methyl-k.html> (last visited Feb. 20, 2013).

¹¹ Study, xv.

¹² Study.

¹³ EPA GUIDELINES 3.

growing concerns about the safety of artificial turf, PEER seeks to ensure that the EPA utilizes research based on sound science in fulfilling its regulatory functions

Mounting evidence demonstrates that the use of tire crumbs in artificial turf presents unacceptable health and environmental risks, especially to vulnerable populations such as the children who regularly use these surfaces. PEER asks that the EPA retract the Study and conduct further studies on the safety of artificial turf in order to ensure the objectivity, utility, and integrity of the information EPA disseminates to the public.

Standing to Challenge the Objectivity of the Study

Any affected individual can challenge information disseminated by an agency by filing a demand for correction.¹⁴ The EPA Guidelines propose a broad interpretation of “affected persons” and asks affected parties to describe how they are affected by the information in question.¹⁵

PEER is an affected individual in that its mission is to hold government agencies accountable for enforcing environmental laws, maintaining scientific integrity, and upholding professional ethics inside public agencies. PEER is a nonprofit organization chartered in the District of Columbia with members throughout the country who are affected by exposure to artificial turf. Among PEER’s members are parents and children who are regularly exposed to these surfaces, as well as the recycled tire crumbs used as infill. Several members of PEER are scientists working in public agencies who have contacted PEER to express their concern that the human health and environmental risks involved in utilizing recycled tire crumbs in artificial turf have not been properly investigated. PEER and its members have a direct interest in the Study being corrected. As such, PEER is an affected person according to the EPA Guidelines.

The Study Is Subject to EPA’s Guidelines

The EPA Guidelines cover information that the EPA disseminates to the public. The Guidelines define information as “any communication or representation of knowledge such as facts or data, in any medium or form.”¹⁶ EPA Guidelines specify that the EPA disseminate information to the public when “EPA prepares the information and distributes it to support or represent EPA’s viewpoint, or to formulate or support a regulation, guidance, or other Agency decision or position.”¹⁷ The EPA Guidelines explain that the “EPA intends to use notices to explain the status of information, so that users will be aware of whether the information is being distributed to support or represent EPA’s viewpoint.”¹⁸

¹⁴ 44 U.S.C. § 3516(b)(2)(B).

¹⁵ EPA GUIDELINES A3.7, 8.2.

¹⁶ EPA GUIDELINES 5.3.

¹⁷ EPA GUIDELINES 5.3.

¹⁸ EPA GUIDELINES 5.3.

The Study on tire crumbs is information subject to the EPA Guidelines. EPA released the Study on its website for the public in December 2009.¹⁹ The accompanying news release states that the EPA will use information from the Study “to help determine possible next steps to address questions regarding the safety of tire crumbs in recreational fields.”²⁰ Despite that claim, the EPA has not taken any concrete action thus far to further study the potential risks of utilizing recycled tire crumbs in artificial turf or regulate the use of tire crumbs.

The Study has been distributed to the public in support of EPA’s view that there are no significant risks to public health from the use of tire crumbs in artificial turf. As such, it is information disseminated to the public that is covered by the EPA Guidelines.

The Study Is “Influential” Scientific Information under EPA’s Information Quality Guidelines

The Study is influential scientific information as defined by EPA guidelines. The EPA considers information to be “influential” when the “dissemination of the information will have or does have a clear and substantial impact ... on important public policies or private sector decisions.”²¹ The EPA Guidelines list documents such as studies, and guidance in support of “top Agency actions” as influential.²² According to the EPA, “top Agency actions usually have potentially great or widespread impacts on the private sector, the public or state, local or tribal governments” and “have the potential to result in major cross-Agency or cross-media policies.”²³

Currently, the EPA plays a significant role in creating national policies on tire disposal, which involve multiple private and public sector stakeholders. In particular, the EPA encourages tire recycling through programs such as grant initiatives.²⁴ The EPA is also mandated to issue federal procurement standards, which apply to items purchased with federal funding.²⁵ The EPA has broad discretion to devise its procurement standards and it has chosen to include recycled tire

¹⁹ Press Release, Limited EPA Study Finds Low Level of Concern in Samples of Recycled Tires from Ballfield and Playground Surfaces (Dec. 10, 2009), *available at* <http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/c8d28e3f9f3ca0a4852576880053bed4!OpenDocument>.

²⁰ Press Release, Limited EPA Study Finds Low Level of Concern in Samples of Recycled Tires from Ballfield and Playground Surfaces (Dec. 10, 2009), *available at* <http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/c8d28e3f9f3ca0a4852576880053bed4!OpenDocument>.

²¹ EPA GUIDELINES 6.2.

²² EPA GUIDELINES 6.2.

²³ EPA GUIDELINES 6.2.

²⁴ 42 U.S.C. § 6914.

²⁵ 42 U.S.C. § 6962(a). The procurement standards are mandated under RCRA and apply to purchases with federal funding of items in a value above \$10,000. *Id.*

rubber in its listing.²⁶ The EPA also coordinates a Scrap Tire Workgroup, which has aimed to divert 85% of scrap tires to beneficial uses, such as artificial turf.²⁷

The Study is influential according to the EPA Guidelines because of its impact on public and private decisions concerning the use of recycled tire crumbs. Scrap tire management is an issue that affects the private sector, several federal agencies, as well as state, local, and tribal governments. The dissemination of the Study has a substantial impact on the EPA Agency decision process as well as the decision process of various state, local, and tribal environmental protection, consumer protection, and health agencies. In addition, the Study will likely have a substantial impact on important private sector decisions by influencing the market for recycled tire crumbs.

The substantial impact of the Study is underlined in its accompanying news release, which quotes Office of Children's Health Protection Director Peter Grevatt, as stating that:

the study will help set the stage for a meeting this spring, where EPA will bring together officials from states and federal agencies to evaluate the existing body of science and determine what additional steps should be taken to ensure the safety of kids who play on these surfaces.²⁸

Furthermore, the Study is the only significant study that the EPA has conducted to investigate concerns about the safety of artificial turf containing recycled tire crumbs. As such, this Study is especially influential and should be subject to review due to its influence on public policy.

I. The Challenged Study Violate EPA Guidelines for Objectivity

(A) The Testing Used Is Inaccurate.

The EPA points out that before the Study there was no validated sample collection or analytical procedures for gathering information on potential exposures by various routes and pathways at synthetic turf fields and playgrounds.²⁹ The EPA recommends that in a new study, the number and placement of sampling locations may need to be changed to adequately characterize a site.³⁰ During the first two days of testing at Field 1, the Air sampling equipment was adjacent to the field or on the field during multiple physical education classes, football

²⁶ 66 C.F.R. § 45256 (2001). The EPA mandates that agencies purchase specified products with the highest quantity of recycled material "as practicable" and that recycled tire crumbs be utilized in artificial turf purchased with federal funds. *Id.*

²⁷ SCRAP TIRE WORKGROUP, SUMMARY OF ACTION PLANS (2007), available at <http://www.epa.gov/osw/conserve/materials/tires/workgroup.htm>. See also *Ground Rubber Applications*, US ENVIRONMENTAL PROTECTION AGENCY, <http://www.epa.gov/osw/conserve/materials/tires/ground.htm> (last visited July 20, 2012) (listing uses for Ground Rubber).

²⁸ *Study*.

²⁹ *Study*, 38.

³⁰ *Study*, 38.

practices, and soccer practices.³¹ On Field 4 there was “sporadic moderate activity,” however, there were no activities on Field 2 or 3 during measurements. The samples could not have produced the same results that would have been measured under the high activity level that is typical on a synthetic turf field. In addition, for the health of those individuals playing on the field it is the personal exposure that is relevant, therefore personal monitoring of particulate and chemical exposure needs to be done.

Alan Stern, of the New Jersey Department of Environmental Protection, expressed his concern with the limited sampling like that in the Study.³² He says that if these samples turned up lead using the wipe test, then it would be likely that the lead would be present in breathing zones of players on the field.³³ It is likely that a significant particulate cloud could be created on the field when there is a high level of activity on the field during a hot day, especially when considering the weight of high school athletes.³⁴

With the playground samples, there were also questions about the accuracy of the results. The tire crumb samples were larger than the optimal testing size, as they were cut to resemble wood chips. The EPA’s decision to not cut up the samples prevented, “sample size matching to extraction procedure requirements and prevented homogenization procedures.”³⁵ This may have contributed to inaccurate results and should not be touted as reliable. Nevertheless the playground was the only “active” sample site and gave above background readings, which should have led to more measurements on playgrounds and fields under active play.

(B) The Study Is Not Reliable Due to Limited Sample Size.

Although there were an estimated 6,000 fields in the U.S. as of 2011³⁶ the full Study protocol was only implemented at two synthetic turf field sites and at only one playground site.³⁷

³¹ Study, 24.

³² ALAN STERN, NEW JERSEY DEP’T OF ENVIRONMENTAL PROTECTION, AN EVALUATION OF POTENTIAL EXPOSURES TO LEAD AND OTHER METALS AS THE RESULT OF AEROSOLIZED PARTICULATE MATTER FROM ARTIFICIAL TURF PLAYING FIELDS, *available at* <http://www.nj.gov/dep/dsr/publications/artificial-turf-report.pdf>.

³³ ALAN STERN, NEW JERSEY DEP’T OF ENVIRONMENTAL PROTECTION, AN EVALUATION OF POTENTIAL EXPOSURES TO LEAD AND OTHER METALS AS THE RESULT OF AEROSOLIZED PARTICULATE MATTER FROM ARTIFICIAL TURF PLAYING FIELDS, *available at* <http://www.nj.gov/dep/dsr/publications/artificial-turf-report.pdf>.

³⁴ ALAN STERN, NEW JERSEY DEP’T OF ENVIRONMENTAL PROTECTION, AN EVALUATION OF POTENTIAL EXPOSURES TO LEAD AND OTHER METALS AS THE RESULT OF AEROSOLIZED PARTICULATE MATTER FROM ARTIFICIAL TURF PLAYING FIELDS, *available at* <http://www.nj.gov/dep/dsr/publications/artificial-turf-report.pdf>. “What levels of materials can be inhaled by football players who even in high school can weigh over 100kg?” *Id.*

³⁵ Study, 38.

³⁶ FAQs, THE SYNTHETIC TURF COUNCIL, <http://www.syntheticurfCouncil.org/displaycommon.cfm?an=1&subarticlenbr=209#player> (last visited Feb. 14, 2013).

³⁷ Study, xiii. The EPA had planned to fully test four fields and four playgrounds however they ended up collecting only limited samples were collected at a total of six fields. The access to playgrounds was also restricted and they only collected samples at two playgrounds. *Id.* At the time of the EPA study there were an estimated 5,300 synthetic turf fields. Kristi Wiedemann, *New EPA study fails to alleviate concerns over artificial turf*, CONSUMER REPORTS, (Jan. 8, 2010), *available at* <http://blogs.consumerreports.org/safety/2010/01/new-epa-study-fails-to-alleviate-concerns-over-artificial-turf.html>.

The EPA says that the limited scoping size was acceptable because the Study was only intended to “help understand and assess methods for characterizing potential route and pathway-specific exposure.”³⁸ However, because of the limited scope, another study should be conducted with the full testing protocol conducted on a larger number of samples. Though the EPA planned to full implement the Study protocol on four fields, that is still too low a number to produce reliable results, especially as the number of communities choosing synthetic turf with tire infill is increasing.³⁹

The samples taken in the Study were also too limited in scope due to the large variety of tires used in synthetic turf fields. The EPA took samples from four fields, located in North Carolina, Georgia, and Ohio. But as discussed above, only two fields were tested with the full testing protocol.⁴⁰ Therefore, the components found in those two fields could vary greatly from components found in fields in New York for example, or California. Suzanne Wuerthele, a former toxicologist from the EPA’s Denver office, said that the EPA should have sampled a more representative number of fields that use different types of tires before drawing any conclusions on the study.⁴¹

Due to this limited scope the EPA did not test all of the known chemicals in tires, and therefore in tire crumbs. For example, testing was not done for, arsenic, cadmium, chromium, manganese, mercury, lead, benzene, latex, and other compounds. The specific effects of some of these chemicals will be discussed in section (D).⁴²

Because of the Study’s limited sample size numerically, geographically, and in the variation of the samples, the Study’s findings should not be treated as conclusive.

(C) The Study Failed to Study Older Fields.

Of the fields studied, only one of the tested fields was five years old⁴³ despite concerns over increased hazard of chemical exposure as the tire crumb infill ages.⁴⁴ The ages of the fields were as follows, Field 1 was two years old, Field 2 was four years old, Field 3 was five years old, Field 4 was four years old, field 5 was three years old, and Field 6 was two years old.⁴⁵ Of the

³⁸ Study, 24.

³⁹ The estimated number of fields has increased from 3,500 to 6,000 from 2008 to 2011. Federal Agencies at Odds over artificial turf recommendations, Consumer Reports (Sept. 5, 2008, 11:56 AM), available at <http://news.consumerreports.org/safety/2008/09/lead-in-turf.html>; FAQs, THE SYNTHETIC TURF COUNCIL, <http://www.syntheticturfCouncil.org/displaycommon.cfm?an=1&subarticlenbr=209#player> (last visited Feb. 14, 2013).

⁴⁰ Study, 24.

⁴¹ Jan Hefler, *EPA: No urgent concern over artificial field surfaces*, THE PHILADELPHIA INQUIRER (Dec. 11, 2009).

⁴² See *infra*, part (D).

⁴³ Study, 24.

⁴⁴ *Artificial Turf*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/nceh/lead/tips/artificialturf.htm> (last visited Feb. 14, 2013). “As the turf ages and weathers, lead is released in dust that could then be ingested or inhaled, and the risk for harmful exposure increases.” *Id.*

⁴⁵ Study, 25.

playgrounds, Playground 1 was four years and Playground 2's age was unknown.⁴⁶ Of the six fields, air samples were taken only from Fields 1, 2, 4, and only from Playground 1.⁴⁷ Therefore, there was no air sample taken from the oldest of the fields (Field 3) even though there was already a concern over the increasing possibility of toxicants being released as synthetic turf fields' age.⁴⁸ The synthetic turf industry reports that fields can be safely used for eight to ten years, and if that is the case then in order to have comprehensive and accurate results, the EPA must conduct a study looking at fields older than five years.

(D) The Study Failed to Consider Effects of the Various Chemical Components of Tire Crumbs on Children.

The Study was "designed to evaluate the methods for generating quality environmental data for selected tire crumb constituents and for understanding potential exposure routes and pathways" however, the EPA admits that the Study has many limitations and that it "did not evaluate methods for all the reported tire crumb constituents [such as] Semivolatile organic compounds (SVOCs) reported in some studies were not sampled or analyzed because of resource limitations."⁴⁹

Because of these "resource limitations" the Study did not consider the effects on children of the various chemical components of tire crumbs.⁵⁰ When ground up, the tire crumbs and the tire crumb dust emit these chemicals as the fields are played on.⁵¹

Most of the various toxicants and metals contained in tire crumbs can have deleterious effects on children, including severe irritation of the respiratory system, severe irritation of the eyes, skin and mucous membranes, systemic effects on the liver and kidneys, neurotoxic responses, allergic reactions, cancers, and developmental effects.⁵² The following is a breakdown of the various toxicants present in tires and tire crumb and their specific effects on the human body.⁵³

⁴⁶ Study, 25.

⁴⁷ Study, 24-25.

⁴⁸ *Artificial Turf*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/nceh/lead/tips/artificialturf.htm> (last visited Feb. 14, 2013). "As the turf ages and weathers, lead is released in dust that could then be ingested or inhaled, and the risk for harmful exposure increases." *Id.*

⁴⁹ Study, 3. Examples of SVOCs that were not sampled or analyzed included Benziothiazole, aniline, and polycyclic aromatic hydrocarbons (PAHs). *Id.*

⁵⁰ Maria Llompert, et al., *Hazardous Organic Chemicals in Rubber Recycled Tire Playgrounds and Pavers*, 90 CHEMOSPHERE 423-31 (2013). It is well known that rubber tire debris contains toxic compounds such as highly aromatic oils and other reactive additives...Tire rubber is composed of 40–60% rubber polymer, reinforcing agents such as carbon black (20–35%), aromatic extender oil (up to 28%), vulcanization additives, antioxidants, antiozonants, and processing aids (plasticizers and softeners)...One of the main components of extender oil is highly aromatic oil, which contains polycyclic aromatic hydrocarbons (PAHs) in the range of 300–700 mg kg⁻¹. *Id.*

⁵¹ Email from Nancy Alderman, President, Environment and Human Health, to Michael P. Firestone, Head of Children's Health Protection, U.S. Environmental Protection Agency (Jan. 10, 2013) (on file with the PEER).

⁵² *Summary of Toxic Actions*, ENVIRONMENT AND HUMAN HEALTH, INC, http://www.ehhi.org/reports/turf/health_effects.shtml#h (last visited Feb. 14, 2013).

⁵³ Email from Nancy Alderman, President, Environment and Human Health, to Michael P. Firestone, Head of Children's Health Protection, U.S. Environmental Protection Agency (Jan. 10, 2013) (on file with the PEER).

- 1, 3-butadiene, a known human carcinogen. It affects the skin, ocular, and nervous systems.⁵⁴
- Benzene, a known human carcinogen. It affects the blood, immune, and neurological systems.⁵⁵
- Phthalates, these toxicants consist of a number of different chemicals, which can be damaging to the reproductive system, the developing organs, and the liver.⁵⁶
- Polycyclic Aromatic Hydrocarbons (“PAHs”), these affect the skin, liver, and immune systems.⁵⁷ They have also been shown to be carcinogenic.⁵⁸
- Manganese, this affects the cardiovascular, liver, nervous, and respiratory systems.⁵⁹
- Carbon Black,⁶⁰ these particles can irritate the lungs and potentially result in lung disease. The particles can also irritate the eyes, nose, and throat eventually leading to a chronic

⁵⁴ 1, 3-Butadiene, CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=81> (last visited Feb. 5, 2013).

⁵⁵ Benzene, CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=14> (last visited Feb. 5, 2013).

⁵⁶ Phthalates, CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxchemicallisting.asp?sysid=41> (last visited Feb. 5, 2013).

⁵⁷ Polycyclic Aromatic Hydrocarbons (“PAHs”), CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=25> (last visited Feb. 6, 2013). *See also* Edoardo Menichini et al., *Artificial-turf playing fields: Contents of metals, PAHs, PCBs, PCDDs and PCDFs, inhalation exposure to PAHs and related risk assessment*, 409 SCI. OF THE TOTAL ENVIRON. 4950 (2011) (finding that metals, PAHs, PCBs, PCDDs and PCDFs in rubber used in artificial playing fields and inhalation exposure to PAHs. Zinc and BaP concentrations are high in rubber largely exceeding the Italian soil standards).

⁵⁸ Sadiktsis et al., *Automobile tires – a potential source of highly carcinogenic dibenzopyrenes to the environment*, ENVIRON. SCIE. TECHNOL. March 2012, at 3326-34; *See* Maria Llompart, et al., *Hazardous Organic Chemicals in Rubber Recycled Tire Playgrounds and Pavers*, 90 CHEMOSPHERE 423-31 (2013). It is well known that rubber tire debris contains toxic compounds such as highly aromatic oils and other reactive additives... Tire rubber is composed of 40-60% rubber polymer, reinforcing agents such as carbon black (20-35%), aromatic extender oil (up to 28%), vulcanization additives, antioxidants, antiozonants, and processing aids (plasticizers and softeners)... One of the main components of extender oil is highly aromatic oil, which contains polycyclic aromatic hydrocarbons (PAHs) in the range of 300-700 mg kg⁻¹. *Id.*

⁵⁹ Manganese, CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=23> (last visited Feb. 6, 2013).

⁶⁰ Carbon Black, NIOSH PUBLICATIONS AND PRODUCTS, <http://www.cdc.gov/niosh/idlh/1333864.HTML> (last visited Feb. 6, 2013). “The that the dispersion of ultrafine carbon black nanoparticles in the lungs of rats following intratracheal instillation results in an inflammatory response that is greater than agglomerated ultrafine carbon black.” *Id.*

condition called “obstructive pulmonary disease.”⁶¹ Carbon Black has also been declared a possible carcinogen by the U.S. government.⁶²

- Carbon Black nanoparticles, these are potential occupational carcinogens when in the presence of PAHs.⁶³
- Latex, this is a known allergen.⁶⁴
- Zinc, this can affect the digestive system, the ability for blood to form, and the respiratory system.⁶⁵ It is also highly toxic to aquatic organisms and inhibits the growth of plants when it leaches into water and soil.⁶⁶
- Lead, this is known to affect the cardiovascular system, to affect organ development, the digestive system, and the ability to form blood, the muscular and skeletal system, the nervous system, the ocular system, the renal system, and the reproductive system.⁶⁷

In addition to the above listed toxicants, a Connecticut Agricultural Experiment Station Study recently found that the following toxicants were present in tire crumbs:⁶⁸

- Benziothiazole, this toxicant can cause skin and eye irritation and it is harmful if swallowed.⁶⁹
- Butylated hydroxyanisole, this is a recognized carcinogen, a suspected endocrine toxicant, a gastrointestinal toxicant, an immunotoxicant, a neurotoxicant, and a skin and sense organ toxicant. *Id.*⁷⁰

⁶¹ *California's Prop 65 and Public Health Concerns over Carbon Black*, BENZINGA (Nov. 5, 2012, 10:40 AM), available at <http://www.benzinga.com/pressreleases/12/11/w3056805/californias-prop-65-and-public-health-concerns-over-carbon-black>.

⁶² *Occupational Safety and Health Guideline for Carbon Black: Potential Human Carcinogen*, CENTERS OF DISEASE CONTROL AND PREVENTION, NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (1988), available at <http://www.cdc.gov/niosh/docs/81-123/pdfs/0102.pdf>; *Carbon Black*, U.S. DEPARTMENT OF LABOR (Nov. 10, 2012), available at http://www.osha.gov/dts/chemicalsampling/data/CH_225300.html; *Final Report: Comparison of the Carcinogenicity of Diesel Exhaust and Carbon Black in Rat Lungs*, ENVIRONMENTAL PROTECTION AGENCY, http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/5342/report/0 (last visited Mar. 5, 2013).

⁶³ *FILLING THE KNOWLEDGE GAPS FOR SAFE NANOTECHNOLOGY IN THE WORKPLACE*, NIOSH NANOTECHNOLOGY RESEARCH CENTER vi (2004-2011), available at <http://www.cdc.gov/niosh/docs/2013-101/pdfs/2013-101.pdf>.

⁶⁴ *Latex Allergy: A Prevention Guide*, NIOSH PUBLICATIONS AND PRODUCTS, <http://www.cdc.gov/niosh/docs/98-113/> (last visited Feb. 6, 2013).

⁶⁵ *Zinc*, CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=54> (last visited Feb. 6, 2013).

⁶⁶ *Inorganics*, ENVIRONMENTAL PROTECTION AGENCY (Dec. 28, 2011), available at <http://www.epa.gov/R5Super/ecology/toxprofiles.htm#zn>.

⁶⁷ *Lead*, CDC: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=22> (last visited Feb. 6, 2013).

⁶⁸ MaryJane Incorvia Mattina, et al., *The Connecticut Agricultural Experiment Station, Examination of Crumb Rubber Produced from Recycled Tires*,

⁶⁹ *Artificial Turf: Exposures to Ground up Rubber Tires – Athletic Fields, Playgrounds, Garden Mulch*, ENVIRONMENT AND HUMAN HEALTH, INC., http://www.ehhi.org/reports/turf/health_effects.shtml (last visited Feb. 6, 2013).

- n-hexadecane, this is known to be a severe irritant based on human and animal studies.⁷¹
- 4-(t-octyl) phenol, this is known to be corrosive and destructive to mucous membranes.⁷²

Many of these chemicals are carcinogens and can have a negative effect on humans' nervous systems, reproductive systems, dermal systems, ocular systems, or immune systems. These chemicals are especially harmful to children, as it takes a smaller amount of the chemical to have harmful effects on the child. Some of these chemicals are also developmental toxicants, meaning they specifically affect children's organs as they are developing.

The Consumer Products Safety Commission (CPSC) also regulates many of these chemicals. In general, the CPSC's Office of Compliance publishes requirements under the Federal Hazardous Substances Act for testing and labeling of hazardous chemicals and more specifically it has banned six different phthalates in items designated as children's toys.⁷³ It has also declared that any "unnecessary exposure" of children to lead should be avoided.⁷⁴

(E) The Study Fails to Consider Effects of Heat.

Although the Study collected samples during the hottest time of the day to test whether increased temperatures caused an increase in the release of chemicals or metals from the tire crumb, it did not consider the effects of the higher temperatures created by the synthetic material on the children playing on the fields. As Dr. Phillip Landrigan, MD Chairman of Community & Preventative Medicine at Mount Sinai School of Medicine pointed out, "heat also is a concern, raising the possibility of heat stress or heat stroke; temperatures on artificial turf fields have been recorded at 130 to 140 degrees."⁷⁵ Dr. Landrigan is referring to the risk of heat exhaustion or heat stress on children while they are playing on the field, and not merely to the increased risk of

⁷⁰ *Artificial Turf: Exposures to Ground up Rubber Tires – Athletic Fields, Playgrounds, Garden Mulch*, ENVIRONMENT AND HUMAN HEALTH, INC., http://www.ehhi.org/reports/turf/health_effects.shtml (last visited Feb. 6, 2013).

⁷¹ *Artificial Turf: Exposures to Ground up Rubber Tires – Athletic Fields, Playgrounds, Garden Mulch*, ENVIRONMENT AND HUMAN HEALTH, INC., http://www.ehhi.org/reports/turf/health_effects.shtml (last visited Feb. 6, 2013).

⁷² *Artificial Turf: Exposures to Ground up Rubber Tires – Athletic Fields, Playgrounds, Garden Mulch*, ENVIRONMENT AND HUMAN HEALTH, INC., http://www.ehhi.org/reports/turf/health_effects.shtml (last visited Feb. 6, 2013).

⁷³ *Phthalates*, CONSUMER PROTECTION SAFETY COMMISSION, <http://www.cpsc.gov/Regulations-Laws--Standards/CPSIA/Phthalates/Phthalates-Information/> (last visited Feb. 12, 2013). "Phthalates are chemical plasticizers that are often used in the production of many types of plastics, certain inks, and other products." *Id.*

⁷⁴ *Guidance for Lead in Consumer Products*, CONSUMER PRODUCT SAFETY COMMISSION, <http://www.cpsc.gov/Center-Modules/Siteworx-Stuffs/Businfo1/Businfo/Guidance-for-Lead-Pb-in-Consumer-Products/> (last visited Feb. 6, 2013). "The scientific community generally recognizes a level of 10 micrograms of lead per deciliter of blood as a threshold level of concern with respect to lead poisoning. To avoid exceeding that level, young children should not chronically ingest more than 15 micrograms of lead per day from consumer products." *Id.*

⁷⁵ Associated Press, *Synthetic turf fields kicking up safety concerns*, NBC NEWS (May 5, 2009, 12:49 PM), <http://www.nbcnews.com/id/30793416/#.UR0BIFrEocs>.

toxins or toxicants being released from tire crumb due to the increasing heat.⁷⁶ At the University of Missouri, a turfgrass specialist measured an air temperature at head height level above a synthetic turf field as 138°F while the surface temperature was 178°F.⁷⁷ A group at the Pennsylvania State University took surface temperatures of a synthetic turf field and recorded 120°, 130°, and 146°F while the corresponding ambient air temperatures were 79°, 78°, and 85°F, respectively.⁷⁸

The CPSC already warns against increased air and surface temperatures of tire crumb products under playground equipment⁷⁹ and the New York State Department of Environmental Conservation and the New York State Department of Health acknowledge that, “direct contact with the surfaces of elevated temperature has the potential to create discomfort and may cause thermal injury.”⁸⁰

Even the synthetic turf industry has acknowledged the increased temperatures that occur during athletic events taking place on synthetic turf.⁸¹ However, they continue to insist that the fields are safe to use and recommend “misting” athletes and keeping athletes well hydrated.⁸² However, hydration will not help direct dermal burns from direct contact with the synthetic turf and tire crumb surface. This direct contact with the synthetic turf and the tire crumb infill seems a reasonable risk as athletic events held on these fields often result in the athletes taking spills on the field and direct contact to tire crumbs on playgrounds is inevitable for small children playing on playgrounds.⁸³ The EPA must include surface temperature data in their Study, and not just data regarding the chemicals in the air during a hotter day on the synthetic field.

Conclusion

⁷⁶ Associated Press, *Synthetic turf fields kicking up safety concerns*, NBC NEWS (May 5, 2009, 12:49 PM), <http://www.nbcnews.com/id/30793416/#.UR0B1FrEocs>.

⁷⁷ *Fact Sheet: Crumb-Rubber Infilled Synthetic Turf Athletic Fields*, NEW YORK STATE DEPARTMENT OF HEALTH, http://www.health.ny.gov/environmental/outdoors/synthetic_turf/crumb-rubber_infilled/fact_sheet.htm (last visited Feb. 14, 2013).

⁷⁸ *Fact Sheet: Crumb-Rubber Infilled Synthetic Turf Athletic Fields*, NEW YORK STATE DEPARTMENT OF HEALTH, http://www.health.ny.gov/environmental/outdoors/synthetic_turf/crumb-rubber_infilled/fact_sheet.htm (last visited Feb. 14, 2013).

⁷⁹ *Burn Safety Awareness on Playgrounds*, CPSC FACT SHEET, <http://www.cpsc.gov/PageFiles/116113/3200.pdf> (last visited Feb. 14, 2013).

⁸⁰ AN ASSESSMENT OF CHEMICAL LEACHING, RELEASES TO AIR AND TEMPERATURE AT CRUMB-RUBBER INFILLED SYNTHETIC TURF FIELDS, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION & NEW YORK STATE DEPARTMENT OF HEALTH 68 (May 2009).

⁸¹ *FAQs*, THE SYNTHETIC TURF COUNCIL, <http://www.syntheticturfCouncil.org/displaycommon.cfm?an=1&subarticlenbr=209#player> (last visited Feb. 14, 2013).

⁸² *FAQs*, THE SYNTHETIC TURF COUNCIL, <http://www.syntheticturfCouncil.org/displaycommon.cfm?an=1&subarticlenbr=209#player> (last visited Feb. 14, 2013).

⁸³ *Burn Safety Awareness on Playgrounds*, CPSC FACT SHEET, <http://www.cpsc.gov/PageFiles/116113/3200.pdf> (last visited Feb. 14, 2013).

The Study should not be relied upon by the public, other governmental agencies or by the synthetic turf industry. The testing methods used by the EPA were inaccurate.⁸⁴ The Study's limited sample size of two fully tested fields, only one fully tested playground, and the limited geographical scope of the testing sites also contributes to the unreliability of the reports.⁸⁵ The Study also failed to test any fields older than five years, despite scientific and public concern over the increasing risk of chemicals being released into the air and into skin as synthetic turf fields age.⁸⁶ The Study also failed to consider the effects of various chemical components of tire and tire crumbs on children.⁸⁷ This makes the Study's results especially unreliable as children are both the most likely to be exposed to the chemicals in tire crumbs and also will be more affected by the various toxicants.

The Study also failed to consider the effects of heat exhaustion related to the use of tire crumbs.⁸⁸ Though the Study tested the air adjacent to the surface of the sample fields, the surface temperatures of the fields can also become extremely high, putting children at risk for heat stress, heat exhaustion, and dermal burns. For these reasons, the Study's findings are unreliable and should be retracted.

II. The Study Does Not Follow EPA's Guidelines for Utility

The Study does not meet the EPA Guidelines for utility. The EPA defines utility as the "usefulness of the information to the intended users."⁸⁹ The EPA says that this Study's results should be combined with other studies conducted by "Federal, State, and local organizations" and says that combined, this collection of information will be considered by the EPA to "identify possible next steps to address questions from the public regarding the safety of tire crumb infill in ball fields and playgrounds"⁹⁰ and that the Study was "intended to gain experience conducting field monitoring of recreational surfaces that contain tire crumb."⁹¹

After the EPA announced the results of its Study (saying there was no cause for immediate concern from lead and other toxins) the EPA cautioned that the 123 page study was "too small to rule out potential health threats."⁹² According to EPA's Director of the Office of Children's Health Protection the EPA planned hold a meeting in the future to discuss the next steps concerning this issue, saying they would discuss the need of a more comprehensive study.⁹³

⁸⁴ See *Infra* part A.

⁸⁵ See *Infra* part B.

⁸⁶ See *Infra* part C.

⁸⁷ See *Infra* part D.

⁸⁸ See *Infra* part E.

⁸⁹ EPA GUIDELINES 5.1.

⁹⁰ *Study*, xi.

⁹¹ *Study*, xi.

⁹² Jan Hefler, *EPA: No urgent concern over artificial field surfaces*, THE PHILADELPHIA INQUIRER (Dec. 11, 2009).

⁹³ Jan Hefler, *EPA: No urgent concern over artificial field surfaces*, THE PHILADELPHIA INQUIRER (Dec. 11, 2009).

Grevatt said that the testing was too limited to draw national conclusions on the safety of synthetic turf with tire crumbs.⁹⁴

Despite the Study's own cautions against relying upon only this Study because of its limitations, including incomplete component testing and small subject and sample size, it conveys to the public and the synthetic turf community that the EPA has found a "low level of concern" in synthetic turf fields. The public has used this Study time and again as stating the EPA's approval of synthetic turf fields and the EPA's opinion that synthetic fields filled with tire crumb are safe for children.⁹⁵

Of particular concern is the ONLY measurements taken on an actively used play area found a variety of contaminants above background levels. This should have been a red flag to conduct further studies. The National Air Quality standards mentioned are NOT child health standards.

The synthetic turf community is also using the Study to minimize public concerns, without referencing the Study's limitations and limited findings.⁹⁶

Relief Requested

These challenged statements should be retracted because they violate EPA Guidelines for Information Quality. Accordingly, PEER asks that the EPA take the following steps to comply with the Information Quality Act:

1. Remove *A Scoping-Level Field Monitoring Study of Synthetic Turf Fields and Playgrounds* from official publication and cease further distribution.
2. Rescind the Study's accompanying Press Release⁹⁷ and issue a public statement, posted on

⁹⁴ Jan Hefler, *EPA: No urgent concern over artificial field surfaces*, THE PHILADELPHIA INQUIRER (Dec. 11, 2009).

⁹⁵ See MONTGOMERY COUNTY SCHOOLS, ET AL., A REVIEW OF THE BENEFITS AND ISSUES ASSOCIATED WITH NATURAL GRASS AND ARTIFICIAL TURF RECTANGULAR STADIUM FIELDS, available at <http://www6.montgomerycountymd.gov/content/council/ATworkgroup/atreportfinal.pdf> (last visited Feb. 14, 2013). In Montgomery County, Maryland the Parks Department and the public school system cited the Study in published discussion of whether they should install synthetic turf fields with tire crumb infill in their public school fields, "reliance should be placed on the various government studies referenced above that have looked at the human health issues associated with artificial turf fields (and crumb rubber infill in particular) and have not found levels of concern that warrant avoidance of the construction of new artificial turf fields with crumb rubber infill." *Id.* See also

⁹⁶ FAQs, THE SYNTHETIC TURF COUNCIL, <http://www.syntheticturfCouncil.org/displaycommon.cfm?an=1&subarticlenbr=209#player> (last visited Feb. 14, 2013). "A December 2009 U.S. Environmental Protection Agency scoping study of the health risks from inhalation, ingestion, and dermal contact with synthetic turf and crumb rubber found every test result to be 'below levels of concern.'" *Id.*

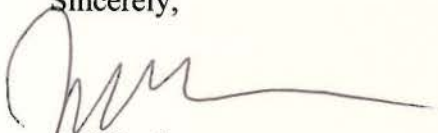
⁹⁷ Press Release, Limited EPA Study Finds Low Level of Concern in Samples of Recycled Tires from Ballfield and Playground Surfaces (Dec. 10, 2009), available at <http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d>.

official websites, that the Study has been withdrawn from publication due to violations of the Information Quality Act.

3. Undertake a more expansive and externally peer-reviewed, study concerning the potential human health and environmental effects of utilizing recycled tire crumbs or shredded tires alone as surface in playgrounds or as infill in artificial turf athletic fields, including studies encompassing personal monitoring on active participants on the fields under simulated use, older installations or fields, the entirety of the installation or field, different exposure pathways, and different contaminants.

We look forward to receiving your response within 90 days, according to the EPA Information Quality Guidelines.⁹⁸ Thank in advance for your prompt attention to this complaint.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Jeff Ruch', with a long horizontal flourish extending to the right.

Jeff Ruch
Executive Director
Public Employees for Environmental Responsibility

⁹⁸ EPA GUIDELINES A55.