

Children's Environmental Health Working Group

Collaborative on Health and the Environment – WA (CHE-WA)

Thursday, November 12, 2015 9:30 AM – 11:30 AM

Meeting location: Edmonds Senior Center, 220 Railroad Ave, Edmonds WA 98020

Host groups: Senator Maralyn Chase, Washington Alliance for Nontoxic Play and Athletic Fields (WANPAF), Northwest Center for Alternatives to Pesticides (NCAP), and Washington Members of the Safe Healthy Playing Fields Coalition (SHPFC)

Speakers/Presentation: Laura Johnson, WANPAF, gave an update on the issue. Dr. Steven G. Gilbert, PhD, DABT and Dr. Dave Anderson, PhD, presented the latest scientific information on health and environmental impacts of artificial turf fields made with recycled crumb rubber.

CHE-WA Children's Environmental Health Working Group: Our mission is to work collaboratively with diverse groups to eliminate children's harmful environmental exposures in the Puget Sound region and beyond during their most critical developmental years: preconception to age 8.

Attendees in-person: (*with CHE-WA)

Dr. David Anderson	EnviroStress Inc.
Nancy Bernard*	WA State Department of Health
D. Campbell	R W Droll-Landscape Architech
Jen Carrigan	WANPAF
Carin Chase	
Senator Maralyn Chase	
Alicia Crank	
Laura Danidli	Edmonds Beacon
Christi Davis (note taker)	WANPAF
T.J. Davis	King County Parks
Megan Dunn* (note taker)	Northwest Center for Alternatives to Pesticides (NCAP)
Bruce Fletcher	M P R (?)
Gail Gensler*	Local Hazardous Waste Management Program in King County
Steve Gilbert*	Institute of Neurotoxicology and Neurological Disorders
Sujata Goel	King County Parks
Heather Hewitt	Student at UW Bothell
Jeff Hutchinson	Snohomish Health District
	Washington Alliance for Nontoxic Play and Athletic Fields (WANPAF)
Laura Johnson	
Gayle Ketzal	Citizen
Rachel Koller*	
Robin Leone	Visitor, UW Bothell Health Studies (Prof Karen Bowman)
Renee McRae	City of Edmonds
Rita Miller	Concerned Citizen
Ava Munson	
Barbara Peterson	Citizen
Vicki M Phillips	Citizen
Dick Nicholson	Shoreline School District/Board

November: Megan, NCAP (Nicole will help with space.)

4. New item: Update on Bright Cities from Gail Gensler

Question: Could our Working Group help fund a meeting of the Bright Cities initiative?

Resolution: We don't have enough money available to make a difference, although a donation of \$300-\$500 was suggested. However the group would like to be involved, and would like to gather more information and possibly extend an invitation to the December CHE-WA meeting.

Member Updates

- Amy and Rachel– Cleaning for Health
They should have something to present at the next meeting regarding their experiences sharing this information with the Westport and Port Townsend school districts.
- Dennis Weaver – Change Your Food Change Your Life™
Handed out gift cards and tickets – Talked about new CD, “A Celebration in the Song of Livin’ the Good Food Life” that promotes organic food. CHE-WA gets 10% of all proceeds. If users use the code, CHEWA10 and enter a C after their last name on checkout (for example “Weaver C”) they get a 10% discount and CHE-WA gets \$2.00 per CD, or \$1.10 per CD download or \$0.38 track.
- Megan Dunn – NCAP
Encouraging parents, teachers and other to join the- Healthy School Action Team at Pesticide.org
- Gail Gensler – LHWMP
She continues to train child care providers about how to reduce exposures to toxins for children on site. She will be providing a training for child care managers next year.
- Nancy Bernard – www.doh.school.environment
The “Cleaning in Your Classroom” section of the indoor air quality guide for classroom teachers and administrators will be updated soon.
- Nichole Thomsen – Public Health – Seattle & King County
Funded by Wells Fargo to look at substandard housing – The first meeting convened last week to see what issues people wanted to address.
 - Nancy – H.U.D. is considering making all public housing smoke free
 - Snohomish County just passed a new vaping law. It is no longer permitted in public places and the law prohibits the sale of vaping products to minors.
- Rachel Koller
Talking and sharing with school nurses – Next week there is a Beacon Hill school event for 16 families with children with asthma. This will be an opportunity to get the MHE program to get into more homes.
- Aileen (American Lung Association)
Aileen noted that Emily Holstein who is fluent in Spanish will be attending Rachel’s Beacon Hill event. She also noted that her office is performing 240 health assessments a year. They have also received a grant for working with the Snoqualmie tribe for talking to children about tobacco use including vaping.
- Stephanie Lecovin – PTA president at Peter Kirk Elementary School in Kirkland
Working with Rachel’s project. Green cleaning kits for teachers – they are being used and are very well received. Received level 1 green school certification and working on level 2.
- Arthur Wendel – ASTDR
Regence – Meeting on siding of child care centers next week in DC
- Lorelei Walker
4000 kids funding early childhood intervention
- Katie Frevert – UW Superfund Research Program
Received a couple of years of funding to continue research and building more partners
- Carolyn Gleason– HRSA No updates

- Angel Ip – EPA No updates
- Holly Davies – Ecology No updates

Networking break

Speaker Presentations on Crumb Rubber

Note: The speaker presentations were videotaped. Watch the video at <http://myedmondsnews.com/2015/11/on-video-presentation-on-artificial-playfields-and-child-safety/> and a related news article at <http://myedmondsnews.com/2015/11/edmonds-school-district-issues-warning-to-city-regarding-possible-crumb-rubber-ban/>.

Laura Johnson – WANPAF

1. The scrap tire problem was motivation for use of tire crumbs in artificial turf fields and shreds in playgrounds.
2. Since tire crumbs and shreds are a recycled product there are no safety regulations.
3. Those with a financial interest in its use lobbied the Consumer Product Safety Commission to exclude artificial turf from being classified as a children's product- therefore it is exempt from laws on chemicals of high concern for children.
4. Tire industry and tire recyclers have Material Safety Data Sheets, advising of the hazardous chemicals and warning against skin contact, eye contact and breathing of vapors. When applying crumb rubber to the field, workers are advised to wear respirators to protect from inhaling the dust. There are no requirements to inform field users about the chemical content and risks, or precautionary guidelines for protection from these chemicals.
5. Tires contain a mix of dozens of carcinogens and other toxic chemicals. However, creative industry spin on the limited studies that have been done has convinced the public that crumb rubber has been proven safe.
6. To date there have been no long term studies looking at the cumulative effects of all of these chemicals on the human body, particularly on children. Lack of proof of harm is not proof of safety.
7. EPA spokesperson pretty much summed up the concerns when she stated "current studies are inadequate and new science is needed to answer questions about turf safety and existing studies do not comprehensively address the recently raised concerns about children's health risks from exposures to tire crumb."

Dr. David Anderson

1. There is no standard formulation. Each field is different, no broad analysis of chemicals is possible.
2. He took temperatures at a local field on an 83° day – grass temperature 87°, turf temperature 144°
3. In California, when the ambient temperature is 90°, the turf can be 171°.
4. Can things interact in such a way as to cause cancer?
5. Back to basics, labs measure outgassing at standard temperature and pressure, standard temperature is 25°C. Q10 ratio indicates that the rate of what is going on doubles at every 10°C - ratio of two results is 40 – exposure on field at 171°F is 40x what is happening in lab at 25°C.
6. One place on a grass field has no grass – in front of the goal. Therefore the mechanical breakdown of crumbs into smaller pieces is likely to be greatest here.
7. Yale did a study of new crumb rubber – 20% of chemicals were carcinogens 40% were irritants (of the chemicals with toxicity information).
8. Standard toxicology studies one chemical at a time, but exposures are real-world exposures of multiple toxins.
9. In his research he used a toxic units approach. LC 50 (Concentration lethal to 50% of organisms) is the exposure it takes to kill 50% of the organisms. If you have an exposure of one chemical that is enough to kill half of the organisms (LC50) and add it to an LC50 of another chemical, then $\frac{1}{2} + \frac{1}{2} = 1$. If what is

observed is equal to 1 (or 100% of the organisms) then you have an additive effect. If it is more than a 1 then you have a synergistic effect. (Note taker comment: I think Dr. Anderson misspoke here since it would be difficult to kill off more than 100% of the organisms, but in general if the observed effect is greater than the sum of the LC's then that would represent a synergistic effect.) If it is less than 1 then you have an antagonistic effect.

10. His concern was that you have to do something like using a toxic units approach to determine if there are additive, synergistic or antagonistic interactions.
11. Amy Griffin is the only one keeping track of effects – based on her list there seems to be something different going on with goalies.
12. Goalies may be exposed to smaller particles because of increased mechanical abrasion of the crumb rubber in front of the goal area. This can produce much smaller particles, increasing surface area by 20 times.
13. Athletes may be getting exposure on more than just on the field. Crumb rubber gets in clothing, and research on phthalates in clothing indicates people humans absorb phthalates from clothing very readily.
14. [Carcinogenesis](#) June supplement was on low dose exposures to toxins in the environment. Researchers are very concerned about environmental cancers because you can't go from toxicity to cancer based on the kind of exposures we are talking about. Scientists from different disciplines around the world are saying we don't have all the answers here and we need more research here on preventing disease. General scientific consensus that environmental toxins cause cancer.
15. Children get a higher dose because dose in toxicology is measured in mg/lb of body weight so a 50 lb child gets 4 times the dose of a 200 lb adult.
16. Research on the health effects of crumb rubber is already underway since the kids are already on the fields. Amy Griffin is the only one monitoring the results. We need research on diseases and disease rates associated with fields, not just exposures and toxicity.

Dr. Stephen Gilbert

1. Classic repeat of stories we have heard before.
2. Should have studied crumb rubber before we exposed children.
3. Nancy Simcox's paper – [Artificial Turf Filed Investigation in Connecticut](#), details what chemicals might be in rubber, also did some air sampling studies of people out in
4. Gradient did a great study — he did not read through paper – incorrectly defined dose as amount of chemical that enters body – that is exposure, (paper does contain useful data)
5. Industry is building up uncertainty around issue.
6. Nanotubes are a potential problem, may be similar to asbestos.
7. PM 2.5 moves down into lungs and is another concern.

8. He quoted [Dr. Philip Landrigan](#), dean of global health at New York's Mt. Sinai Hospital – “Children go to playgrounds almost daily.” “And gifted athletes are on the soccer field almost every day. That sort of cumulative exposure results in a buildup in their body of these toxic chemicals, and can result in a buildup of cellular damage that's caused by these chemicals, that can then result in disease years or decades later.” “Little children should not be put in a situation where they're forced to be in intimate contact with carcinogenic chemicals.” Dr. Gilbert felt that was common sense.

9. Dr. Gilbert: When disease occurs decades after exposure it is very difficult to link it back to its original cause.
10. Studies are difficult to due to differences in temperature, composition, age of field.

11. His view: industry have studied this very carefully, or government should have forced them to do so before they ever put this on the field.
12. He has started a new website that Laura Johnson is helping him build up. It is called FactsOnCrumbRubber.org. It will have studies, news reports, and other information related to crumb rubber.

Questions and Answers

Audience Question: What are the alternatives to crumb rubber? And how much more expensive are they?

- NikeGrind – We don't know a lot about it, but it appears to be less toxic than crumb rubber.
- Organic – There are a number of organic products that contain a mixture of coconut husks, rice hulls, and cork. There are a number of different products.
- Thermoplastic elastomer – food grade plastic, no dust, reusable.
- Zeolite products – ZeoFill
- Grass
- Alternates may initially be more expensive but may be reusable and may have lower disposal costs.

Stephanie Lecovin: Is all artificial turf crumb rubber? Laura: 90% are crumb rubber. Are some of the outdoor options available for indoor use? (Yes)

State Representative Gerry Pollet – and soccer dad of a goalie: Question for Dr. Anderson: You said the studies were done at standard temperature and pressure, is that universal?

- Reply: You have to do research at standards so you can compare your research to others. But that does not mean your research is comparable to what is going on in the real world. So chemical emissions at high temperatures may be 40 times what is released at lab conditions and surface areas of worn down particles may be 20 times crumbs studied in labs, so 20 times 40 is getting into large numbers. Reactivity may be much higher than what is measured in lab.

Rep. Pollet – State Dept. of Health is beginning to collect data – do we know anything about that? Has anyone done any work looking at blood phthalate levels in some cohort versus soccer players?

- Dr. Anderson referenced a study which found that people absorbed phthalates from their phthalate treated clothing at a dose similar to what they received from breathing phthalate contaminated air for six hours. Since the crumbs and dust don't remain on the field, this type of study indicates that any exposure that players receive likely continues long after players leave the field.
- Nancy Bernard noted that the DOH has a [page on its website](#) on synthetic turf that includes an analysis by one of the DOH toxicologists. You can go from there to a page that has a list of lot of research and a description the cancer cluster investigation.
- Holly Davies added that Kathy Wasserman at DOH is working on cancer cluster investigation. She is the non-communicable disease epidemiologist.
- Dr. Davis referenced a study in which football players who spent two hours on crumb rubber fields did not see significant increases in urinary metabolites for phthalates. (Correction: the study looked for the PAH hydroxypyrene in urine. The complete text of the article can be found here: <http://www.fieldturf.com/sites/fieldturf/assets/Hydroxypyrene.pdf>)

- Audience Question: Is there any air testing for arena sports on fields on a summer day or personal air monitor testing?

Dr. Gilbert – California will be working on that. The Simcox paper also did some work on that.

Audience Question: I thought that someone mentioned that some of this crumb rubber is new product.

Laura and Dr. Anderson clarified that new crumb rubber refers to crumb rubber that is just about to be applied to the field. Old crumb rubber refers to crumb rubber that has been on the field for some time. All crumb rubber is composed of used tires.