

Response from Sarah-Jeanne Royer to the Commissioners' questions

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To: Alex Elvin <elvin@mvcommission.org>;

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Hi Alex,

Below are Sarah-Jeanne's responses to the Commissioners' questions.

Many thanks,
Rebekah

Begin forwarded message:

Aloha! Thank you, Rebekah.

MVC Question #2: Can you put your remarks about LDPE (recycle category 4) in the context of the components used in the proposed synthetic turf products? In other words, is the proposed product composed of LDPE plastic? What greenhouse gases are emitted from LDPE plastics?

I can see from the Material Data Safety Sheet for the Greenfields IronTurf Ultra Green carpet produced with TenCate fibers that it is made of polypropylene and polyethylene. According to my research PE and PP are the two polymers that produce most greenhouse gases and hence the polymers have an impact on climate especially when exposed to air and with a large surface area.

I can also see from the MSDS for the Brock USA shock pad that it is made of polypropylene and ethylene copolymer as well. Again, based on my research, these polymers do emit continuous greenhouse gases when found in the environment and exposed to sunlight.

All of the tested polymers in our study (total of 7 including, LDPE, HDPE, PP, PET, acrylic, polycarbonate, polystyrene) emit greenhouse gases such as methane, ethylene, propylene, ethane, CO₂.

MVC Question #3: You spoke about "weak polymers" degrading particularly fast. Can you explain what a weak polymer is and why it is subject to rapid degradation? Is the proposed synthetic turf product composed of weak polymers?

A weak polymer would be LDPE for example that has a weak chemical structure and is prompt to degrade and fragment faster than other polymers such as PVC. The reason I mentioned this is because as plastic degrades in the environment it occupies a larger and larger surface area, the weaker it is the faster it occupies more volume and hence produces more GHGs. Ultimately in the case of synthetic turf, the composition does not have such a major impact since it comes already with a very large surface area as there are about 800 millions blades for a normal soccer field and hence is a huge GHG emitter at its very beginning. Polyethylene is also the type of polymers that will emit the most but the 6 other polymers mentioned above all produce GHGs as well.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200574>

I hope it helps!

Sarah-Jeanne

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