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## Nature's Grass, or Artificial Plastic Surfaces for Our Schools?

### **I. Cancer Concerns About the chemicals in Artificial Turf.**

- A) "Rubber" tires, the source of the major component of artificial turf, are 25% toxic petrochemicals, including, among others, Benzene, Butadiene and Styrene which are EPA-listed as definitely cancer-causing, especially to children. (See U.S. EPA references {A} on the back of this page).  
(Tires also contain Poly Aromatic Hydrocarbons and Cadmium Sulfate, which are suspected carcinogens)
- B) All artificial turf is 80% unattached rubber particles, down to the size of rubber dust, made by grinding up used tires. In the most commonly used brand, Field Turf, the rubber tire particles are mixed with sand, and lie between green ("like grass"), bladelike, upright plastic strips, open to the surface, where children's hands will obviously touch them.
- C) Children putting their fingers in their mouths, touching their sandwiches, etc, will result in their swallowing the cancer-causing chemicals, Benzene, Butadiene and Styrene found in the tire particles and tire dust that has gotten on their skin.
- D) According to the California Environmental Protection Agency, although the above-listed chemicals are recognized as cancer-causing, there have been no tests involving having children swallow those chemicals. (Thank goodness for that)

I do not believe that the parents in the Reed Union District Schools want their children, or any children, to swallow cancer-causing chemicals, as they will if artificial turf is installed.

### **II. Additional important issues, regarding grass fields vs. plasticized surfaces**

- A) Cost: Plastic is much more expensive than Grass. (see reference {B} on back of this page)
- B) Heat: Studies show artificial turf, becomes uncomfortably hot, so no picnics etc. on artificial turf. (see attached temperature references {C} on the back of this page, showing turf temperature up to 60 degrees hotter than grass).  
Also: Whereas, on hot days, the evaporation of water in grass, and the heat-absorbing effect of soil beneath grass, cool neighboring areas, artificial turf, unfortunately, radiates the heat that strikes it, into neighboring areas, therefore making surrounding areas hotter.
- C) All food and drink, except water, are banned from artificial turf, because fallen food and drinks make it sticky. So, again, no picnics, etc. on artificial turf. **Grass has no such limitations.**
- D) The broader significance of choosing Grass vs. choosing plasticized surfaces:
- 1) The structure of each "blade" of Artificial Turf is rigidly conformist, all "blades" being identical. The casualness of grass, on the other hand, says to children: play and enjoy.  
How easy it is, in our rushed society, to forget those important values, and to forget to impart them to our children.
  - 2) Birds land on grass. Insects crawl in it. Worms burrow under grass, fertilizing and aerating it. When children play on grass, they are learning that they are part of nature and that nature is part of their lives. Artificial Turf, on the other hand is plastic, and dead. Nothing lives on it, or in it. Which ambience do we want for our children?
- E) Finally, when we adults say yes to grass fields of living vegetation, and say no to plasticized, dead, artificial surfaces for our children, we, by example, impart to them a respect for, and love of nature.

**For all of these reasons, I urge you to say Yes to Natural Vegetation, and to say No to Plastic surfaces for School Recreation Areas.**

(Please see other side for Reference Data)

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June 19, 2005

Dear Trustees of the Reed Union School District:

(Amended to point to draw attention to the fact that **Benzene, which is EPA-defined as definitely cancer causing to people, is also listed (as an artificial turf rubber particle "process oil") on the manufacturer's Materials Safety Data Sheet (MSDS).**

Please find, attached, the MSDS from the provider of the "rubber", which makes up 95% of the rubber particles, lie free, open to the air, and to handling by children who play on artificial turf.

Mr. Jim Anderson, who represents the tire recycling company, Recovery Technologies of Canada, which provides artificial turfs rubber particles has told me that MSDS's are written by manufacturers, and aren't subject to government regulation or approval. (Contact Tel: 519-740-6801)

Please note the following information, which is contained in the attached MSDS:

- A) Section I attests to the presence of Butadiene, which is classified as **definitely cancer-causing in people.** (see EPA reference below).
- B) Section II lists six constituents listed by the company, itself, as "Hazardous". One group of these chemicals, designated, "process oil", is a mixture of petroleum products, including Benzene, a Poly Aromatic Hydrocarbon which, like Butadiene, the artificial turf rubber constituent referred to above, is also EPA-classified as **a definite human carcinogen.** (see EPA reference below).
- C) Section VII, "Special Protection", because of the presence of the human carcinogens named above, tells those handling the artificial turf rubber particles to wear gloves.
- D) Section IX tells those who handle the rubber particles to "Wash after handling".

Perspective:

- 1) If artificial turf is installed, children will be handling this material during recreation, picnics, etc.

They will not, as the producer's own MSDS sheet warns, wash their hands before putting their fingers in their mouths, or handling their sandwiches, fruit, etc. They will therefore eat chemicals which are classified by the EPA as causing cancer.

- 2) At the community meeting, June 10, one attendee asked what, if any, safety evaluation process had been used by the Tamalpais Union High School District, when it decided to install artificial turf.

The Director of Development of the High School District has told me that their District reviewed the same MSDS information that is attached to this letter.

Of course, high school athletes who use the competitive fields of the High School District, being older than middle, and junior high school students, are more likely to follow the "wash hands" warning than would be the students at Bel Aire and Delmar, whose safety your Board certainly wants to assure.

In order to assist the Board in making its determination, about whether to install nature's grass, or artificial turf, I will present this information at the next meeting of the RUSD Board of Trustees.

Please feel free to contact me if you have any questions about the information I have provided, or would like to discuss any of its aspects.

Thank you for your attention.

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#### EPA References

- 1) Koppikar, A. M. Health Risk Assessment of 1,3-**Butadiene** (External Review Draft). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, NCEA-W-0267, 1998.
  - 2) USEPA, Carcinogenic Effects of **Benzene**: An Update (Final). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, EPA/600/P-97/001F, 1998.
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## Nature's Grass, or Artificial Plastic Surfaces, for Our Schools?

(continued from other side)

### Reference Data

#### A) U.S Environmental Protection Agency Referenced findings that Specific Tire Chemicals Definitely Cause Cancer.

- 1) USEPA, Carcinogenic Effects of **Benzene**: An Update (Final). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, EPA/600/P-97/001F, 1998.
- 2) Koppikar, A. M. Health Risk Assessment of 1,3-Butadiene (External Review Draft). U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, NCEA-W-0267, 1998.
- 3) Health and Environmental Effects Profile for **Styrene**. U.S. Environmental Protection Agency, Washington, D.C., EPA/600/X-84/325 (NTIS PB88182175).

#### B) Cost analysis for Grass vs. Plastic, at Delmar and Bel Aire

<u>Element of Cost</u>	<u>Grass</u>	<u>Plastic</u>
Installation	\$1,000,000	\$2,000,000
Water (per year)	\$12,000	\$ 0
Maintenance (But this cost is paid by Soccer and Little League, so District cost is actually):	\$18,000 (see notation at left) <u>\$ 0</u>	\$ 6,000  \$ 0

#### Summary of Fiscal Impacts to District:

- 1) Installation of Plastic will cost District \$1,000,000 more than Grass
- 2) District's Water cost Savings with Plastic will be \$12,000 per year.
- 3) Amortization of District's Plastic savings (\$12,000 per year) will take 83 years.
- 4) During the ten year life of the first plastic fields, the District will spend \$1,000,000 more for installation, than it would for grass, and will save \$12,000 per year in costs of water.
- 5) So, why would any one, over the next ten years, spend \$880,000 more for plastic, than it would need to spend for grass?

The reason is that, whereas the \$880,000. extra for Plastic will come from taxes on home owners, the much smaller \$12,000 per year watering cost, with grass, would come from the District's operating budget.

That arithmetic is unlikely to "add up", to a successful bond passage appeal, for home owners who would be asked to pay the \$1,000,000 surcharge "Plastic Tax"

#### C) Review of temperature observations by (objective observers, not salespeople) of Grass Fields vs. Plastic

<u>Source of Study</u>	<u>Air Temp.</u>	<u>Grass Temp.</u>	<u>PlasticTurf Temp.</u>
U.C. Davis	78	79	125
Brigham Young	81 (Average,9AM-5PM)	88 (Maximum)	156 (Maximum)
Belvedere	84	92	148

*Cryogenic Rubber*

Recovery Technologies (Canada) Inc.

1225 Franklin Blvd. Cambridge, Ontario, N1R 7E5 Canada  
 Phone: (519) 740-6801 Fax: (519) 740-6811

**MATERIAL SAFETY DATA SHEET**

January 22, 2002

**SECTION I - PRODUCT INFORMATION**

<b>MANUFACTURER'S NAME</b> Recovery Technologies (Canada) Inc. <b>ADDRESS</b> 1225 Franklin Blvd. Cambridge, ON N1R 7E5		<b>EMERGENCY TELEPHONE</b> 519-740-6801	
<b>CHEMICAL NAME AND SYNONYMS</b> Styrene-Butadiene Rubber		<b>Product Name</b> Reclaprene™ CTR	
<b>CHEMICAL FAMILY</b> Polymeric		<b>Appearance</b> Black and white granular powder	

**SECTION 11 - HAZARDOUS INGREDIENTS**

	%	TLV		%	TLV
Vulcanized Rubber-SBR: (9003-31-0)	45-80		COATINGS		
Carbon Black (1333-86-4)	25-30	N/A	BASE METAL		N/A
Process Oil (61742-04-7)	10-15	N/A	ALLOYS		N/A
Zinc Oxide (1314-13-2)	1-5	N/A	METALLIC COATINGS		N/A
Sulfur (7704-31-9)	1-5	N/A	FILLER METAL PLUS		N/A
Sulfuric Acid (7704-31-9)	1-5		OTHERS		
<b>HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES</b> NONE <i>PROCESS OIL</i>					

**SECTION 111 - PHYSICAL DATA**

<b>BOILING POINT (°F)</b>	N/A	<b>SPECIFIC GRAVITY</b>	0.95 to 1.20
<b>VAPOR PRESSURE</b>	N/A	<b>PERCENT VOLATILE BY VOLUME</b>	N/A
<b>VAPOR DENSITY</b>	N/A	<b>EVAPORATION RATE</b>	N/A
<b>SOLUBILITY IN WATER</b>	very slight		
<b>DOOR</b>	Slight smell of vulcanized rubber		

**SECTION 1V - FIRE AND EXPLOSION HAZARD DATA**

<b>LASH POINT</b>	N/A	<b>FLAMMABLE LIMITS</b>	N/A
<b>EXTINGUISHING MEDIA</b>			
Water-Protein, foam-dry chemical extinguisher (Do not use high pressure water)			
<b>SPECIAL FIRE FIGHTING PROCEDURES</b>			
Smoke from burning rubber is Hazardous to Health Use self-contained breathing apparatus			
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b>			
None			

(SEE OTHER SIDE)