

**USGBC TSAC PVC Draft Report dated December 17, 2004 (released
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Comments on:

TSAC PVC Task Group. December 17, 2004.
Assessment of Technical Basis for a PVC-Related Materials Credit in LEED

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The narrow risk assessment performed by the TSAC PVC Task Group in its *Assessment of Technical Basis for a PVC-Related Materials Credit in LEED* is a classic example of how risk assessment can be used for making an elephant disappear. The Task Groups asks what is the certain toxicological impact of the tail of the PVC elephant? What is the certain toxicological impact of the left toenail of the PVC elephant? The major problem with the PVC elephant is that it is a large contributor to the cumulatively threatening, globally-distributed, industrially-produced, persistent, bioaccumulative, and biocidal class of pollutants that are entering essentially all living organisms unbidden: organochlorines. PVC's additives (e.g., DEHP, the most common vinyl plasticizer) contribute to another globally-distributed, industrially-produced class of pollutants that is entering and often bioaccumulating in living organisms: phthalates.

The non-PVC materials examined by the TSAC PVC Task Group, namely aluminum, wood, fiber-cement (the Task Group does not identify whether the fiber-cement is manufactured using hazardous wastes as fuel¹), ABS, cast iron, linoleum, and cork, also were not examined in terms of their contribution to cumulative global toxic pollution.² As a result, the TSAC PVC

¹ Cement manufactured using chlorinated hazardous wastes as fuel will also contribute to global organochlorine pollution.

² The word "global pollution" appears only once in the 119-page TSAC PVC Task Group report, on p. 21, in a sentence describing the literature search publication, *Pollution Abstracts*. The other seven times "global" is used is in the phrase "global warming."

The word "cumulative" likewise appears only once in the TSAC report, on p. 88: "A 20% increased risk of lung cancer for every year worked was reported in Italian PVC baggers exposed to PVC dust; cumulative exposure to VCM was not associated with the lung cancer cases (Mastrangelo et al., 2003)."

Task Group has failed to identify the toxics feature (i.e., global organochlorine and phthalate pollution) that makes PVC stand head and shoulders above the other materials as an extraordinarily inappropriate building material. This toxicological tunnel vision of the TSAC PVC Task Group allows it to not see what hospital associations, Sony, Hewlett-Packard, the Australian version of the U.S. Green Building Council, Austria and other entities, as well as global toxicologists, clearly see, i.e., (1) the need to move away from PVC and (2) the availability of alternative materials that pale beside PVC as a source of toxic global organochlorine (incl. dioxin/furan) and phthalate pollution.

PVC is an extraordinarily inappropriate building material:

- Because the building block of PVC is chlorine, highly persistent, bioaccumulative, toxic organochlorines including dioxins, chlorinated furans, PCBs, hexachlorobenzene, and octachlorostyrene are released into the environment throughout the lifecycle of PVC. All of these contribute to the cumulative global organochlorine pollution and chemical contamination of ecological systems and organisms, including humans. Organochlorines variously disrupt endocrine systems, suppress the immune system, and initiate and/or promote cancer.
- Toxic phthalate plasticizers added to produce non-rigid PVC leach out and are local and global pollutants of ecological systems and organisms, including humans. They are considered particularly threatening to reproduction and development.
- Highly toxic, non-degradable metal stabilizers, including lead, cadmium, and organotins are released during manufacture, use, and disposal into living systems locally and globally.

The TSAC PVC Task Group looked

- Only at a limited set of PVC construction materials (and one at a time - not their combination with the wide range of other PVC products that would be used in a LEED-blessed PVC-constructed building),
- Only at some of the organochlorine, phthalate, and heavy metals involved with PVC construction,³
- Only one by one for those toxicants they did study,
- Only in terms of toxicity to humans (mostly already-born humans) from PVC production, use, and disposal of PVC construction materials
- only at toxicity to humans of the construction materials in isolation from their contribution to the cumulative, current, toxic global organochlorine, phthalate, and heavy metals pollution to all living beings on Earth.

As a result, The TSAC PVC Task Group reduces the highly-documented global environmental contamination and toxicity of PVC and its additives to numbers and caveats about which toxic

³ For instance, although lead is added to PVC as a metal stabilizer, lead toxicity (e.g., there is no known safe level of lead in children) is not addressed by the TSAC PVC Task Group (see Table A, Appendix D, TSAC report, p. 116). Indeed, the word “lead” (i.e., the metal lead) never appears in the report at all.

endpoints have only been observed in laboratory animals and which only in humans;⁴ which results have been found in one but not two other studies, and which bad-news evidence of toxic damage in humans needs to be “further studied.”⁵ Dioxin goes away somewhere.⁶ Data from the Vinyl Institute are used without questioning the objectivity of the source,⁷ and other sources of data are unidentified as to the funding source for the reader (which can greatly affect which questions are asked and not asked, which study methods are used, and whether results unfavorable to the material(s) being studied are published).⁸

Eventually, the TSAC PVC risk assessment works its magic, and PVC comes out looking like something the Green Building Council could approve as a material consistent with environmental health. This result at once diminishes any claim that this risk assessment can

⁴ For example, “Current data in children suggest a link between phthalate exposure and allergic reactions, but they are not supported by current animal studies” (TSAC report, p. 93)

⁵ For example, “Additional studies regarding asthma and other respiratory diseases in children and adults are needed to help inform the relationship between phthalates and asthma” (TSAC report, p. 93).

And, while exposure to VCM has been associated with cancers of the hematopoietic and lymphatic systems and malignant melanomas, “These tumors have not been reported in American workers” (TSAC report, p. 88) *Have these tumors been looked for in American workers?*

In 1999 the EPA found high levels of VCM in air samples around vinyl manufacturing facilities in Lake Charles, LA, and “consistent exposure of individuals to these concentrations may indeed pose a significant health risk,” but more recent data (i.e., five years later) haven’t been gathered, and more data “are needed in order to better assess the potential risk” (TSAC report, pp. 83-84)

Among residents exposed to vinyl manufacturing releases, Mossville LA residents recently “were found to have high blood levels of dioxin, compared to those in the rest of the country”, so “...future monitoring of the exposed populations with regard to cancer incidence might yield valuable cancer dose-response information” (TSAC report, p. 87). *We need MORE cancer dose-response information about DIOXIN?*

⁶ For example, when dioxins landed on nearby surfaces and the foliage of trees following a fire in a Canadian plastics recycling plant, the dioxin pollution “...quickly decreased to background urban levels within approximately one week, following two rain events” (TSAC report, p. 51). *Where did the dioxins GO? Dioxin is a persistent bioaccumulative toxicant and does not break down in a week. How much of the “background urban levels” of dioxin in towns are due to vinyl manufacture, use, fires, and disposal?*

⁷ For example, although 23 cases of angiosarcoma were identified in a Louisville, KY vinyl factory, “Since the establishment of the OSHA PEL of 1 ppm VICM...no new cases of angiosarcoma have been identified according to the vinyl industry. (TSAC report, p. 88).

⁸ For example, the report notes on p. 90, “[Phthalate] studies have not been identified that investigated either direct testicular effects or indirect effects on sperm quality or number in occupational workers or in those incidentally exposed to phthalates from the building materials analyzed in this report” and “...data are limited” with regard to fertility effects in men exposed to phthalates in their working environment. *There are reasons such studies have not been undertaken and such data are limited. (We are aware that the the database of references sometimes identifies source, but there is no apparent attempt in the text to qualify studies by their funding source.*

compare the major environmental health threats of building materials, as well as any claim to environmental leadership by the United States Green Building Council.

The big environmental health picture, i.e., that PVC is an unnecessary, major contributor to global organochlorine and phthalate toxic pollution, has been hand-waved into non-existence. The TSAC PVC Task Group conclusions are akin to saying that one small drink of alcohol won't harm a grown man, while ignoring that the grown man under consideration is a 30-year alcoholic smoker with liver damage who has just been on a 24-hour drinking binge.⁹ It wouldn't be responsible to nod approval as that man drank one more shot of vodka and it isn't responsible to nod approval to building with PVC in an organochlorine-contaminated, phthalate-contaminated, lead-contaminated world.

If the U.S. Green Building Council can conclude that PVC qualifies for a Leadership in Energy and Environmental Design-approved building, then LEED will mean NOTHING to the public, decisionmakers, or builders. Recently I was speaking with the mayor of a Pacific Northwest town. She mentioned with approval that her city may move to incorporating LEED standards into its public building requirements. I said, "Do you know the U.S. Green Building Council is considering giving PVC the LEED stamp of approval?"

"Well, so much for LEED," the astonished mayor responded. The mayor is right.

The U.S. Green Building Council need look no further than the feedstock (chlorine) of this major building material, and the growing number of towns, nations, and organizations that recognize PVC for the toxic monster it is, to decide that a credit for PVC avoidance should be given.

As Rachel Carson noted in *Silent Spring*:

The choice, after all, is ours to make. If, having endured much, we have at last asserted our "right to know," and if, knowing, we have concluded that we are being asked to take senseless and frightening risks, then we should no longer

⁹ In its discussion of DEHP, for example, the TSAC report does not mention that, based on biomonitoring studies and emerging information about DEHP metabolism, a significant fraction of the US population is currently likely to be exposed to DEHP at levels that approach or exceed EPA's reference dose.(see, e.g., *J Chromatogr B Analyt Technol Biomed Life Sci.* 2005 Feb 25;816(1-2):269-80.1; Koch H, Drexler H, Angerer J. (2003) An estimation of the daily intake of di(2-ethylhexyl)phthalate (DEHP) and other phthalates in the general population. *International Journal of Hygiene and Environmental Health* 206:77-83.; Koch H, Drexler H, Angerer J. (2004) Response to the letter of R.M. David. *International Journal of Hygiene and Environmental Health* 207:75-76; CDC. (2003) *Second National Report on Human Exposure to Environmental Chemicals. Centers for Disease Control and Prevention.* Atlanta, GA. <http://www.cdc.gov/exposurereport/2nd/phthalates.htm>; David R. (2003) Commentary regarding the article by Koch et al.: an estimation of the daily intake of di(2-ethylhexyl)phthalate (DEHP) and other phthalates in the general population. *International Journal of Hygiene and Environmental Health* 206, 77-83.)

accept the counsel of those who tell us that we must fill our world with poisonous chemicals. We should look about and see what other course is open to us.

If we aren't encouraged by LEED standards to look at what building construction course is open to us in order to avoid PVC, then we'll need to look about and see what alternative to LEED standards the U.S. Green Building Council are available for energy and environmental leadership.

---Mary O'Brien is author of *Making Better Environmental Decisions: An Alternative to Risk Assessment* (MIT Press, 2000).