

Summary of Some Hazardous Building Products - Developer Discussion with Pioneer Valley Project 3/18/03

Material of Concern	Health Issue	Alternatives – Cost, Availability, etc.	Comments
<p>Carpet and Carpet Components:</p> <ul style="list-style-type: none"> ◆ Synthetic carpet materials ◆ Carpet pad ◆ Adhesives – solvent-based ◆ Seam sealants – solvent based ◆ Carpet backing ◆ Carpet treatments – pesticide, stain, microbial, fire retardants, anti-static 	<p>New Carpet</p> <ul style="list-style-type: none"> ◆ Off-gassing from over 100 hazardous chemicals from all carpet components for long-periods of time, creating both acute and chronic exposures for the occupants. ◆ As the off-gassing decreases, people who have become sensitized from the initial acute exposure can continue to react to the lower levels of chemicals. <p>As Carpet Ages</p> <ul style="list-style-type: none"> ◆ Fitted carpets are one of the two areas of the home that harbor the most house dust mites. Carpets can carry up to 100,000 dust mites in one square meter. They are extremely hard to eradicate, even with insecticides. Dust mites have been identified as the single most important trigger for <i>asthma attacks</i>. ◆ Carpets can also be a source of mold, if it has been wet for more than 48 hours. Molds can also cause or trigger <i>asthma</i>. ◆ Since Americans spend up to 90% of their time indoors, exposure to indoor allergens and irritants may play a significant role in triggering asthma episodes. The impact of asthma falls disproportionately on African-American and certain Hispanic populations, and appears to be particularly severe in urban inner cities. A causative major factor maybe the housing. 	<ul style="list-style-type: none"> ◆ The Carpet and Rug Institute has a certification program for companies that produce less toxic carpet components. For situation where you must have carpet, we do have guidelines for the least toxic options. These options are readily available. ◆ Although there are less toxic carpet materials, there is still the dust mite and mold problem posing asthma problems. ◆ Initial cost – less than other floor coverings. ◆ Replacement costs – need to be replaced more often than other alternatives, bringing lifetime cost higher than other alternatives. (Concern for developers who own units.) 	<ul style="list-style-type: none"> ◆ Need to educate homeowners who demand carpet. ◆ Carpet is usually located in areas that receive foot traffic and dirt such as living rooms. They are also located in bedrooms, which <i>should</i> be free of allergens, asthma triggers, and chemical exposure for the immune system to repair itself on a daily basis. ◆ Asthma groups at the local, regional and international level are calling for the elimination of carpet in all housing.

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<p>Wood Composite Products containing Urea Formaldehyde as a binder:</p> <ul style="list-style-type: none"> ◆ Particle Board ◆ Medium Density Fiberboard (MDF) ◆ Oriented Strand Board ODB ◆ Interior plywood <p>Used for:</p> <ul style="list-style-type: none"> ◆ Sheathing ◆ Sub-flooring ◆ Cabinetry ◆ Shelving ◆ Doors ◆ Paneling ◆ Trim 	<ul style="list-style-type: none"> ◆ EPA considers formaldehyde a probable human carcinogen when inhaled or ingested. ◆ It is chemically unstable and will off-gas for as long as the material is exposed to sufficient moisture levels. Gradually, the "off-gassing" declines, but never goes to zero. It always returns when it is exposed to elevated temperature and humidity. ◆ It can cause both short and long term health hazards for the homeowner, including respiratory irritation and <i>asthma</i>. Some people's tolerance to formaldehyde is reduced (sensitization) following their initial exposure to the gas. Then, they react to even small amounts in subsequent exposures. 	<ul style="list-style-type: none"> ◆ There are formaldehyde free wood composite products. We are conducting research on their cost and availability. Some are at comparable prices to the exterior plywood, but the shipping cost is an issue. ◆ Exterior grade plywood contains phenol formaldehyde, which is more stable and off-gasses at a lower rate. It can often be used in place of interior grade plywood, MDF, and OSB. It cost twice as much as OSB, and half as much as interior grade plywood. This is a common building product that is widely available. ◆ Some formaldehyde-based materials can be sealed to reduce off-gassing. 	<ul style="list-style-type: none"> ◆ The total amount of formaldehyde-based products in a house is significant when you include: sheathing, sub flooring, cabinetry, shelving, doors, paneling, and trim. Then the homeowner adds furniture and curtains with formaldehyde. ◆ Many of the urea formaldehyde products such as shelving and cabinetry are used in areas of high humidity such as bathrooms and kitchens.

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Vinyl and Vinyl Composition Tile (VCT)	<ul style="list-style-type: none"> ◆ Several types of phthalates in are used as plasticizers in PVC tiles. <ul style="list-style-type: none"> ○ They leach out into the air, in wash water, and as dust. ○ They can contribute to sensitization <i>in asthma</i>, affect the reproductive system, and are a possible carcinogen. ○ They are being removed from baby products. ◆ High levels of an organotin - tributyl tin (TBT). Organotins cause reproductive and developmental damage in animals, and nervous and respiratory problems in humans. ◆ VOCs off-gas from the petroleum base of the tiles. ◆ VOCs off-gas from adhesives used to install tiles. Less emissions from adhesive backed tiles. ◆ It releases deadly gases such as hydrogen chloride long before it ignites in a fire. 	<ul style="list-style-type: none"> ◆ Linoleum is at least twice the cost of vinyl. It is a long-lasting alternative, which is available, well known and commonly used in the trades. ◆ Ceramic tile is not that much more expensive for the tile itself, but the cost of increased structural support (when necessary) and labor for grouting increases the overall cost. It too is a durable alternative that is available, well known and commonly used. 	<ul style="list-style-type: none"> ◆ Vinyl can be high maintenance, as it requires a floor finish. It can be coated to create a “no wax’ finish. Otherwise, maintenance is high, and additional hazardous products are required such as petroleum-based sealer and solvent based strippers. ◆ The maintenance on linoleum and ceramic tile is minimal.
Vinyl Siding	<ul style="list-style-type: none"> ◆ It releases deadly gases such as hydrogen chloride long before it ignites. 	<ul style="list-style-type: none"> ◆ Fiber cement board alternatives include; hardiplank, hardiboard, cimplank. They do not require wood backing, thus reducing that cost. ◆ Other alternatives include: solid wood, plywood, wood-resin composites, stucco, masonite, or aluminium 	<ul style="list-style-type: none"> ◆

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Solvent Based Finishes	<ul style="list-style-type: none"> ◆ Exposure predominately during application. ◆ Most products completely cure in a six weeks, depending on temperature and humidity, unless improperly applied. ◆ Sensitive people can be affected up to a year after. 	<ul style="list-style-type: none"> ◆ Water based products are readily available and commonly used. Some major paint companies such as Benjamin Moore, Glidden, and Pratt and Lambert all carry an environmental line of paint that can be purchased right off the shelf. ◆ These paints have improved over time and are not significantly more cost than other latex paints. ◆ Alternative products should not have the following: <ul style="list-style-type: none"> ○ Formaldehyde ○ Pesticides ○ Heavy Metals ○ Aromatic hydrocarbons in excess of 10% by weight ○ Halogenated solvents ○ VOC content does not exceed 380 g/l ◆ Low biocide paints can spoil if not used quickly, and can be a medium for mold growth on a finished surface. 	<ul style="list-style-type: none"> ◆
Solvent Based Adhesives	<ul style="list-style-type: none"> ◆ Exposure during application. ◆ Exposure during occupation when adhesive fails to cure due to moisture, and continues to off-gas. 	<ul style="list-style-type: none"> ◆ Water based products are readily available and commonly used. ◆ They have improved over time. They can be more sensitive to ambient conditions such as temperature and humidity. 	<ul style="list-style-type: none"> ◆ These products have an early history of not working and some contractors may be gun shy to use them.