NATIONAL STONE, SAND & GRAVEL ASSOCIATION

Natural building blocks for quality of life

Safety & Health Committee

HEALTH ALERT

Polyurethane Exposure

July 2004

Plant managers, safety personnel and all employees who work with polyurethane products or may be exposed to decomposition products from them should be aware of the potential for injury from air contaminants that may be released when materials made of polyurethane are heated. In aggregate operations, this could occur when a polyurethane material, such as a polyurethane screening, is cut using a power saw with an abrasive blade, or when hot work is performed near such material. This hazard may not be addressed in the MSDS for the products in question.

Polyurethane begins to break down at approximately 240C (464F) – a temperature which can be reached at the point where a rapidly rotating saw blade contacts the polyurethane, or when hot work is performed above or near polyurethane.

At this temperature, isocyanates may be released from the polyurethane. Other air contaminants which may also be released include cyanide (CN), hydrogen cyanide (HCN), cyanic acid (HCNO), nitrous oxide (N_2O), and carbon dioxide (CO_2). Hydrogen chloride (HCl) may also be released if the finished polyurethane contains any chlorine.

These air contaminants may cause lung damage and/or interfere with cellular respiration. Isocyanates have been associated with occupationally induced asthma in the U.S.

Cutting processes which raise the temperature of polyurethane to the breakdown point **SHOULD NOT** be used. Whenever possible, polyurethane should be cut using a shearing-type tool.

If a power saw must be used, it should be equipped with local exhaust ventilation connected to a vacuum source capable of preventing these potential air contaminants from being released back to the workplace or into the environment. The power saw operator must also wear appropriate respiratory protection and protective clothing to prevent exposure to these potential air contaminants. An industrial hygienist should be consulted for guidance in exposure assessment and selection of respirators and protective clothing.

Polyurethane must also be protected from heating when hot work is performed above or near it. Remove the polyurethane from the hot work area whenever possible. If the polyurethane cannot be removed from the work area, it should be protected from heating (e.g., a fire blanket).