



## Health Impacts Associated with Exposure to Criteria Pollutants Emitted From Titan Cement, Page 1 of 2

<b>Criteria Pollutant</b> <i>(Pollutants EPA classifies as having significant health &amp; environmental impacts)</i>	<b>What is main concern associated with this pollutant?</b>	<b>Who is most at risk to dangerous effects of this pollutant?</b>	<b>Why is this pollutant so dangerous to our local public health?</b> <i>(In New Hanover County, more than 200 local physicians have added their names to the growing list of more than 8,000 citizens who oppose Titan Cement because of the negative impacts it will have on the public health of our community—especially our most vulnerable population. Children, the elderly and those with asthma and heart/lung diseases are most at risk from the increases in criteria pollution. There are numerous studies documenting health impacts from criteria pollutants. These are short summaries. For more information, please go to <a href="http://www.stoptitan.org">www.stoptitan.org</a>)</i>
<b>Particulate Matter (PM)</b>	Serious impacts to respiratory and heart function.	Anybody with existing heart and lung disease. Children and the elderly. Healthy individuals with no previous history.	Increased respiratory symptoms, irritation of the airways, coughing, difficulty breathing, decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, premature death in people with heart or lung disease. People with heart or lung diseases, children and older adults are the most likely to be affected by particle pollution exposure. However, even if you are healthy, you may experience temporary symptoms from exposure to elevated levels of particle pollution. (Source: EPA website: <a href="http://www.epa.gov/air/particlepollution/basic.html">http://www.epa.gov/air/particlepollution/basic.html</a> )
<b>“Course” Particulate Matter (PM10)</b>	Serious impacts to respiratory and heart function as the immune system.	Anybody with existing heart and lung disease. Children and the elderly. Healthy individuals with no previous history.	When inhaled these particles evade the respiratory system's natural defenses and lodge deep in the lungs. PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to PM10's adverse health effects. Of greatest concern are recent studies that link PM10 exposure to the premature death of people who already have heart and lung disease, especially the elderly. (Source: California EPA, <a href="http://www.arb.ca.gov/html/brochure/pm10.html">http://www.arb.ca.gov/html/brochure/pm10.html</a> )
<b>“Fine” Particulate Matter (PM2.5)</b>	Serious impacts to respiratory and heart function.	Anybody with existing heart and lung disease. Children and the elderly. Healthy individuals with no previous history.	Health studies have shown a significant association between exposure to fine particles and premature death from heart or lung disease. Fine particles can aggravate heart and lung diseases and have been linked to effects such as: cardiovascular symptoms; cardiac arrhythmias; heart attacks; respiratory symptoms; asthma attacks; and bronchitis. (Source: EPA, <a href="http://www.epa.gov/pmdesignations/basicinfo.htm">http://www.epa.gov/pmdesignations/basicinfo.htm</a> )

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<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	Serious impacts to respiratory and heart function.	Same as PM <sub>10</sub> , especially asthmatics.	SO <sub>2</sub> particules penetrates deeply into sensitive parts of the lungs and can cause or worsening respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death. (Source: <a href="http://www.epa.gov/air/sulfurdioxide/health.html">http://www.epa.gov/air/sulfurdioxide/health.html</a> )
<b>Nitrogen Oxides (NO<sub>x</sub>) – contributes to ozone</b>	Serious impacts to respiratory and heart function.	Children with asthma, people with existing lung disease and people who work or exercise outside.	NO <sub>x</sub> react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death. (Source: EPA, <a href="http://www.epa.gov/air/nitrogenoxides/health.html">http://www.epa.gov/air/nitrogenoxides/health.html</a> )
<b>Carbon Monoxide (CO)</b>	Reduces oxygen delivery to organs, esp. heart and brain.	People with existing heart disease are most at risk.	CO can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death. (Source: EPA, <a href="http://www.epa.gov/airquality/carbonmonoxide/health.html">http://www.epa.gov/airquality/carbonmonoxide/health.html</a> )
<b>Volatile Organic Compounds (VOC) – contributes to ozone</b>	Serious impacts to respiratory and heart function.	Children with asthma, those with existing lung disease, and healthy individuals with no previous history.	VOCs combine with NO <sub>x</sub> to form ground level ozone. Exposure to ground-level ozone can trigger chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level ozone also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. (Source: EPA, <a href="http://www.epa.gov/air/ozonepollution/health.html">http://www.epa.gov/air/ozonepollution/health.html</a> )
<b>Lead</b>	Adversely effects cardiovascular, kidney, immune system, nervous system and reproductive system.	Cardiovascular system, in adults and neurological development in children.	Lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits and lowered IQ. (Source: EPA, <a href="http://www.epa.gov/air/lead/health.html">http://www.epa.gov/air/lead/health.html</a> )