

# **ENVIRONMENTAL FUTURES**

For Minnesota Futurists by Earl C. Joseph & Hank Lederer (<http://www.mnfuturists.org>) – 12/16/06

SUBJECT	21 <sup>st</sup> CENTURY DIRECTIONS & FUTURES
<ul style="list-style-type: none"> <li>• DEFINING THE ISSUES</li> </ul>	<ul style="list-style-type: none"> <li>• What is anticipated to get worse?</li> <li>• What is anticipated to get better?</li> <li>• What are the global warming trends?</li> </ul>
<ul style="list-style-type: none"> <li>• POSSIBILITIES</li> </ul>	<ul style="list-style-type: none"> <li>• What is anticipated to get worse?               <ul style="list-style-type: none"> <li>➤ Smokestack and automobile usage growth in China and India is causing severe pollution problems because of the methods being used for industrialization.</li> <li>➤ The “Millennium Ecosystem Assessment” 2006 study determined that the capacity of ecosystems to provide people with valued goods and services, such as food, water, fiber, carbon storage, and control of floods, disease and climate, was degraded for nearly two-thirds of the ecosystem services examined.</li> <li>➤ The “Ecosystem Challenges and Business Implications” report warns that companies must transform their business models to avoid major economic losses caused by current and future ecosystem degradation.</li> <li>➤ Invasion of aggressive non-native species into lakes and oceans impacting the food chain.</li> <li>➤ Over-fishing in some areas negatively impacting fishing industry.</li> </ul> </li> <li>• What is anticipated to get better?               <ul style="list-style-type: none"> <li>➤ United States smokestack industries moving to 3<sup>rd</sup> world nations and tends to clean up the environment in the US while negatively impacting 3<sup>rd</sup> world pollution (though helping them economically).</li> <li>➤ Automobile industry continues to reduce per vehicle emissions and increases miles per gallon overall.</li> <li>➤ Appliance industry continues to improve efficiency and recycling.</li> <li>➤ Alternative energy usage is increasing and tends to reduce pollution. (The impact of infrastructure changes can be positive due to increased economic activity.)</li> <li>➤ Increasing our efforts to clean up toxic waste sites.</li> <li>➤ The <i>Agricultural Research Agency (ARA)</i> has developed an environmentally friendly way to produce bleached, itch-free (biopolished), machine-washable wool suitable for use in military apparel and in commercial textile product lines where synthetic fibers are traditionally used.</li> <li>➤ ARA is developing plants that clean up toxic soils contaminated with heavy metals.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>➤ ARA has also developed a Soil and Water Assessment Tool (SWAT): This computer model is leading to cleaner water, longer lived reservoirs, and healthier farms and landscapes across the United States and abroad. The program analyzes watersheds to assess the cost-effectiveness of agricultural practices, identifies water quality problems, and searches for improvements, thus spurring farmers' adoption of conservation practices.</li> <li>➤ ARS scientists created Super Slurper by marrying starch to a synthetic chemical. It can absorb up to 2,000 times its own weight in water. Environmentally, Super Slurper is used as an ingredient in products used to clean up chemical spills.</li> <li>➤ The mission of the National Institute of Environmental Health Sciences (NIEHS) is to reduce the burden of human illness and dysfunction from environmental exposures. The NIEHS achieves its mission through multidisciplinary biomedical research programs, prevention and intervention efforts, and communication strategies.</li> <li>• Global Warming Trends <ul style="list-style-type: none"> <li>➤ Melting of Arctic and Greenland ice is anticipated to raise worldwide ocean levels by 22 feet! (When?)</li> <li>➤ Hurricanes and tornadoes continue to increase in frequency and severity as oceans warm.</li> <li>➤ Global warming will eventually cause a new ice age.</li> <li>➤ Gulfstream continues its change of direction and quantity of flow which causes UK and Europe to experience colder winters.</li> <li>➤ Political action tends to be too slow to ameliorate the negative effects of global warming. Globally we wait until it's 'too late.'</li> <li>➤ Future flooding of current coastal lines will cause tremendous economic impacts globally.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• SOCIETAL IMPACTS &amp; CONSEQUENCES</li> </ul>	<ul style="list-style-type: none"> <li>• US and EU governments and industries have made and continue to make progress in cleaning up the environment which bodes well for the long term future.</li> <li>• This provides the opportunity to transfer and sell environmentally friendly knowledge and products to developing countries.</li> <li>• Often there's a high front-end capital investment to provide environmentally sound processes and products. However, it's also often true that short and long range profits can be realized.</li> <li>• R &amp; D for producing green products and processes has resulted in creating good software for modeling and remediation which is salable.</li> </ul>