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**TOLEDO**  
1872

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## **System for Sensing Chlorine Gas Without Need for Heating**

Chlorine gas is widely used as a whitener and disinfectant in many industrial processes involving paper, fabric, water purification, and food production. Because chlorine is harmful when emitted into the environment, rapid detection of chlorine and chlorine dioxide in the air at the level of maximum permissible concentrations, 1 and 0.1 mg/m respectively, is important. In order to monitor emission of chlorine gases to the environment, continuous detection capability is desirable. Several detection methods have been developed (e.g., solid state electrochemical sensors, phthalocyanine film sensors, gas chromatography), but practical usage and/or stability is often problematic because of the relatively high heat required and/or unsuitability for continuous monitoring. Therefore a highly sensitive, highly stable, and reliable continuous detection system has been developed.

The University of Toledo is seeking a company interested in utilizing this “no-heat-required” continuous chlorine-gas sensing system which provides a method for sensing chlorine gas using sensors comprised of coated nanotubes.

### **Applications:**

1. Industrial monitoring
2. Military applications
3. Environmental monitoring
4. Domestic and household (such as swimming pools)

### **Advantages:**

1. No heat required (sensors function @ room-temperature)
2. Miniaturized microsensors
3. Continuous monitoring capability
4. Fast recovery time without exposure to heat
5. Highly stable, no resistance decrease following exposure to gas
6. Highly sensitive and capable of detecting a trace amount of chlorine
7. Cost-effective, easy to operate, and reliable detection

**This invention is patent pending**

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