# A Sterling Method to Detect both Terrorist and Missiles

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## Abstract

Automatic detection of explosives and terrorist using wireless sensor networks monitors and tracks the explosives that are placed by terrorists at public Environments. There are two individual systems which are interconnected with each other for detection purpose. The area under study is monitored in real time, collect data by the sensor and send to the processor which process the data and compares with the database and if there is a match the processor enables the buzzer which provides early warning to the people in that area. A sensor which is placed in the sewage collects the traces of explosives and identifies the related area from where it is manufactured, in other module metal detector is placed in order to find the explosive placed there. The current system in operation uses sensors which are very expensive and not very sensitive and also uses a good deal of power. The chemical sensor used here is less expensive and efficient also.

**Keyword- Explosive Detection, Paper Sensor, Wireless Sensors, Automatic Explosive Detection System, Less Cost**

## I. INTRODUCTION

Nowadays a lot of attention is being paid to the development of methods and instrumentation for the detection of explosives. Initiated explosives have already killed thousands of people and injured several tens of thousands. Infrastructural facilities, like railway stations, airports. Government authorities worldwide are taking a closer look at the safety of infrastructure, energy supply, nuclear power plants and buildings. Structural engineers to new forms of bomb attacks are more sophisticated, more dangerous, using the remote control of Improvised Explosive Devices (IED). Initiation by mobile phones permits terrorists to initiate a bomb immediately. Therefore, detection systems with a reliable detection efficiency used in broad range of IEDs are an important problem.

Traditional explosive detection systems are bulkier in size, expensive, and always require manual attention. Because of its public visibility intruder can easily bypass the system using another route. A wireless sensor network consists of several types of autonomous sensors to co-ordinately monitor a particular activity. The system consists of a processor, a sensor and wireless transceiver equipment. The system collect the sensor data, perform local processing and transmit the required information to the security officials.

## II. RELATED WORK

Ion mobility spectrometry (IMS) is the most common technique used for commercial applications of trace explosives detection. IMS systems operate under ambient conditions and are priced moderately [7]. The main disadvantage of the IMS instruments is it normally contain a small quantity of radioactive material as an ionizing source which poses health risk to the operator. .

Another method in explosive detection is Chemiluminescence.the CL is the production and emission of light as the output of a chemical reaction. The produced light is proportional to the amount of NO present, which is related to the amount of the equal nitrogen containing explosive materials. The drawback of this system is it does not detect the not nitro based materials.


Fig. 1:

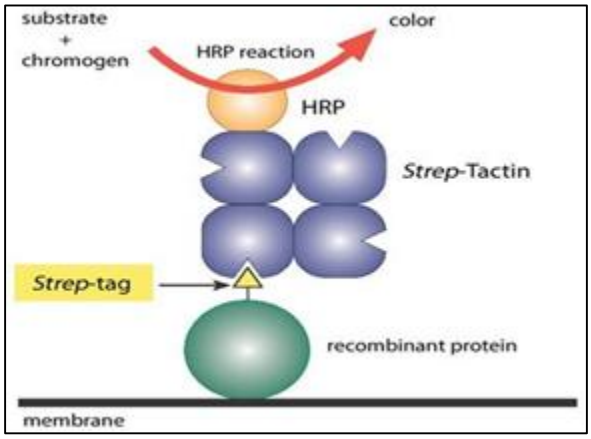



Fig. 2: Chemiluminescence methodology

In surface acoustic wave (SAW) method detection of explosives materials is based on frequency changes that occur when materials are deposited on the SAW crystal surface [9].Advantage of this method is it does not use radioactive material so it will not impose any health risks. The SAW is nonspecific and the presence of other chemicals a gas container is necessary for operating the instrument.

The other method is mass spectrometry (MS) which uses an explosive material's molecular weight and fragmentation patterns for identification [3]. MS divides and analyzes the chemical composition of a specimen by ionizing molecules and passing them through a filter. The disadvantages of using this MS systems is it require a gas supply or vacuum pump and the sample analysis time can be relatively long.

Fig. 3: portable mass spectrometry devices

Specially designed machines bombard the suspect explosives with neutrons and read the gamma radiation decay signatures to determine the chemical composition of sample. The earliest form of neutron activation analysis use low energy neutrons to determine the ratios of nitrogen, chlorine and hydrogen in the chemical species, and are an effective means of identifying most conventional explosives.

Fig. 4: Instrumental method of neutron activation analysis

Gas chromatography (GC) is often coupled to the detection methods discussed above in order to separate molecules before detection. This not only improves the performance of the detector but also adds another dimension of data, as the time takes for a molecule pass through the GC may be used as an indicator of its identity. Unfortunately, GC normally requires a bottled gas, which creates a consumable and ease of use issue for the system. The disadvantages of gas chromatography are limited to volatile sample, not suitable for thermally reliable samples, samples are soluble and does not react to the column and more attention is needed.

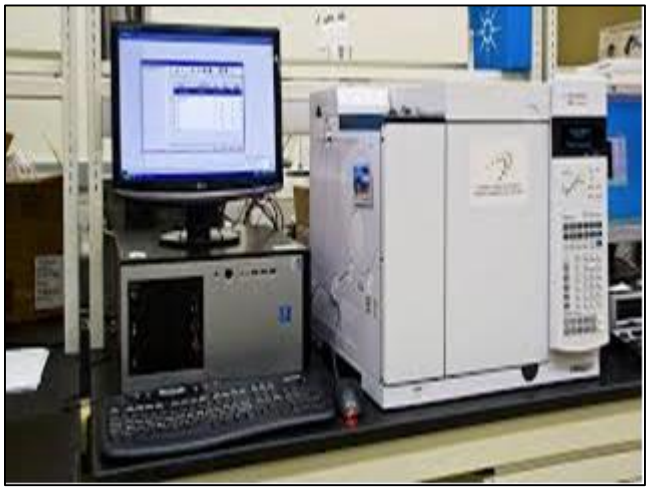
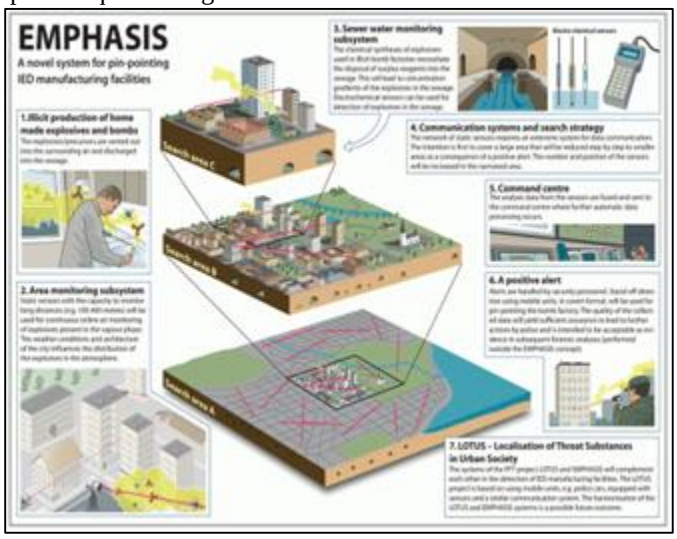


Fig. 5: Equipment of gas chromatography

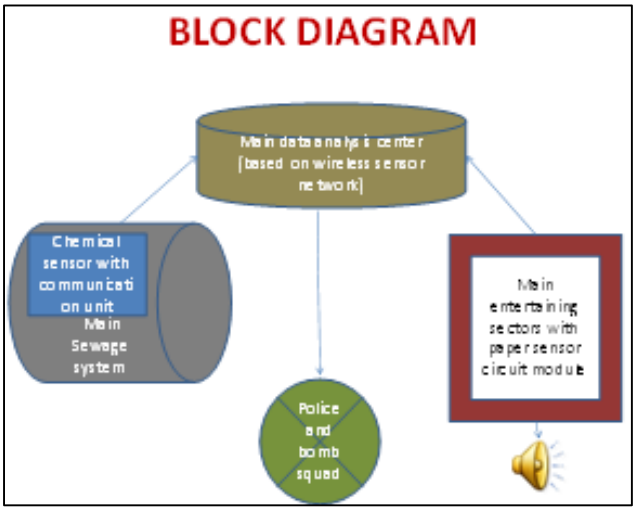
## III. CURRENT SYSTEM

Current system known as emphasis is a method in which a chemical sensor is placed in the sewage by which the traces of explosive materials made by the terrorist in the homes, apartment and illicit production of the explosives are identified. They use a specially designed sensor method to detect the terrorist.in the sewage like solar panels the sensors are placed everywhere in order to accurately detect then explosive material traces waste product that goes down the drain leaves the clue. Chemical sensors placed in the city sewer system make the work easy to find the bomb makers. Under this scenario, if the sensor traces the explosive trace, an alarm is sounded and a special police squad swing into that area and arrest the terrorist




## IV. PROPOSED SYSTEM

The proposed system will overcome the limitations in both the traditional and the current systems that are using for explosive detection. In this proposed system the first one is the sewage module in which the chemical sensor and the communication unit is fixed. The second module is the entertaining sectors where the metal detectors are placed in order to find the explosive place within that area.




## V. CONCLUSION

The mostly used bomb techniques in modern world are good, but this paper involves the method which reduces the human effort. The idea to trace explosives and to detect them is made in this paper. This system is cost efficient.

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