Industrial pollutants are mainly discharged from various origins such as pulp and papermills, chemical fertilizers, oil refineries, sugar factories, tanneries, textiles, steel, distilleries, fertilizers, pesticides, coal and mineral mining industries, drugs, glass, cement, petroleum and engineering industries etc.

Most of the industries dump via transporter to dumping places and thus there is no necessity for a check in the industry itself. The people staying nearby often utilize the same land and water for agricultural and daily purposes. We believe that the industries should not take things lightly and especially for people staying nearby and the workers of the particular place a check should be there which when is absolutely necessary, warns the area of the contamination in soil and water. Industries have always had an intelligent solution about this. Dumping pipes always had a solvent which would dissolve the contamination if the level increases. This process is called neutralization But, this never gave the locals and the workers about information or statistical data about the amount of contamination currently present in the surroundings, instead all they get to know that the solvent is doing its job. We aim to target this problem by cost effective solutions.

We are trying to design a device which will measure the soil, water and air contamination in the particular area and warn the industries and local people when contamination limit exceeds. We are trying to make cost efficient product using IOT.

Equipment used to build the monitoring device:

1. AT Mega 32 A
2. Sensors
3. AWS EC2 Ubuntu server
4. Node Red
5. HiveMQ

Sensors used:

1. Mq7 and Mq135 for monitoring air.
2. Dissolved oxygen sensor and ph value reader for monitoring water.
3. NPK contamination sensor and ph value sensor for soil.

We have designed a device which, using sensors, takes data from the surroundings and feeds into the MCU. The MCU the feeds the data into AWS server using Wi-Fi and HIVEMQ as the topic broker. We installed Node RED in AWS server to receive input from the MCU and do certain calculations and provide the required output to the client.

Node Red is programmed in such a way that it reads data from MCU and shows the output in a graph. It is also programmed to:

1. Raise an alert if NH3 is over 50ppm
2. Raise an alert if CO2 is over 5000 ppm
3. Raise an alert if CO is over 50ppm
4. Raise an alert if CO is over 400 ppm
5. Raise an alert if SO2 is over 5 ppm
6. Raise an alert if N is over 40 ppm
7. Raise an alert if P is over 50ppm
8. Raise an alert if K is over 80ppm
9. Raise an alert if PH is less than 6 or greater than 8
10. Raise an alert if PH is less than 6 or greater than 8
11. Raise an alert if DO in water is less than 3ppm