

## Geological and Environmental Sustainability

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### **Abstract**

*Learning about microbes is not a simple thing. It's an ocean. Radiation and chemicals such as cesium, Ethyl Methyl Sulfonate (EMS), Nitro methyl and urea induces mutation [1]. So if we produce more air and radiation pollution new form of microbes can form in the earth and atmosphere. So we should adapt with nature, technology should not be overloaded.*

*Dependability of living things:*

*Earth is a beautiful place for living. In order to understand the geography we should understand the expression of nature. Birds are the natural satellites. They know the raising sea level and natural disasters. So if we observe it carefully we can understand the mother earth. They migrate according to the favorable condition [2]. If we believe a small pond has risen from a small pit made by birds, animals and humans then our understanding is good about earth. All the living things are important for the earth. Human are depending to the earth worm, insects and microbes.*

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### **I. Introduction to microbes**

Good microbes are everywhere in the earth. They are in the soil, water and air. They help the organisms to degrade and through this they recycle the carbon, oxygen and nitrogen [3]. Certain microbes like *Rhizobium* fix the nitrogen in the soil [4]. If they fail to do this duty the atmosphere cannot work properly. Physical agents, Water pollution, air pollution and radiation pollution causes the death of this microbes [5].

### **Role of radiation in mutation:**

Radiation causes the more effective mutation in plants, animals and microbes than in human. Mutation is a sudden heritable change in the genome. The mutagenic effects of radiation were first recognized in the 1920s after that it was successfully applied in genetic engineering [6].

Ultra violet radiation has very limited power to destroy the microbes. Mutation can be induced with gamma radiation in plants [7]. Gamma radiation comes from radioactive isotopes such as <sup>60</sup>Co which has the ability to kill the microbes completely [8].

### **Harmful radiation:**

Radio activity is the process of releasing energy either by particles ( $\alpha$ ,  $\beta$ ) or high energy photons (gamma and x ray). High radiation causes cancer in human. But below 100 msv consider as short term dose and no actual evidence of harm [9].

### **Radio active elements**

Radium is highly radioactive and causes cancer. Radium was discovered in 1898 by curies. To extract 1 gm of radium, about 8 tons of pitchblende which has up to 50% of uranium is needed. Uranium was discovered in 1789 by Martin. He obtained it from mineral pitchblende. Promethium is another metal formed from fission of uranium. Radon, thorium and actinium are the radioactive elements [10].

### **Environmental sustainability and corona**

For sustainability of environment we should adapt with nature. Agriculture using natural manure is the best way to increase good microbes. Technology should not be overloaded particularly in vast area like RUSSIA. Grow trees and forest as much we can to make earth as a beautiful place. Agricultural land can bring back the good microbe on the earth. Earth can sustain as long the good microbes live on the earth. Africa is the only continent around the world which has the least number of corona. No new production were occurred as they are not producing radiation (11)

## **II. Conclusion:**

Thus I have given details of how radiation causes mutation in organisms including bacteria and viruses. That is the result of new corona variations. Vast area on the earth (Russia) should not produce more frequencies of radiation.

## **Reference:**

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- [5]. MICROBIOLOGY –By Pelczar, Chan and Noel- 5<sup>TH</sup> Edition –page 472
- [6]. 12<sup>th</sup> std TN bio botany book –p-194
- [7]. 12<sup>th</sup> std TN bio botany book –p-194
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