



SULFUR

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Abstract

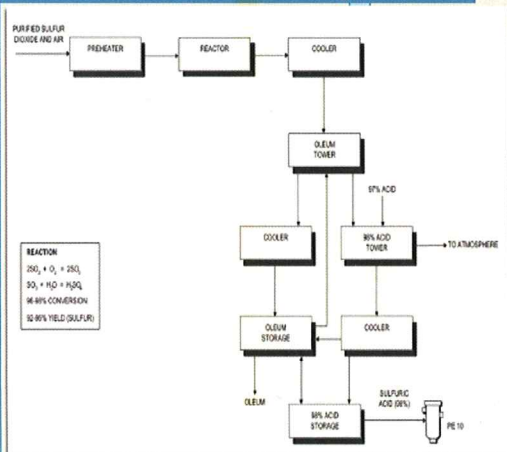
Sulfur is an important fuel in pyrotechnic mixtures, because it is cheap and stable. Up to 88% of the world's sulfur production is used to produce Sulfuric Acid (H_2SO_4), which is produced directly from elemental sulfur or sulfur-containing raw materials. 4% of the remaining 12% is made of paper, 3% is used in the textile, rubber and chemical industry, the production of «Carbon Disulfide», 3% in agriculture as insecticide and the remaining 3% is used in a wide variety of other areas such as tanning, photography, whitening and metal industry.

Introduction

Sulfur or sulphur is a chemical element with symbol **S** and atomic number 16. It is abundant, multivalent, and nonmetallic. Under normal conditions, sulfur atoms form cyclic octatomic molecules with a chemical formula S_8 . Elemental sulfur is a bright yellow crystalline solid at room temperature.

Sulfur is found in different forms. These are called allotropes of sulfur. It's three important allotropic forms are: rhombic sulfur, monoclinic sulfur, and plastic sulfur. The common form is called rhombic sulfur. It is made up of eightsided yellow crystals

Process Flow Diagram



Main Body

In the first centuries, people used sulfur as desinfectant and medicine. But nowadays firms use elemental sulfur to getting the rubber harder, petroleum refining, bleaching the dried fruits, supporting the fertilizer in farming, producing fireworks, shampoos, fabrics, soap, gunpowder and matches. It's also using as medicine for damaged skins or abortion. They use sulfur in fertilizers because it has amino acids which make up the right balance of chemicals.



There is no sulfur deposit in Turkey, but there are lots of seller firms. Major ones in our country are Köseoğlu Sulfur Factory and Mikrotek Chemistry. Some producer firms in the world obtain sulfur from petrol as a side-product. Firms usually sell granulated sulfur by kilogram or by ton. Package size depends on the customers wantings, and price depends on the size and processing degree.



Results and Conclusions

Sulfur was known to the ancients as a substance that was found in volcanoes and hot springs. However, sulfur was than used in black gunpowder and used for making it so the powder didn't explode with the slightest amount of friction

Sulfur only makes 0.05% of Earth's crust, located in deep underground deposits. It is found along the Gulf coast of the United States, in Poland, Sicily, The Pacific Ring of Fire, Indonesia, Chile, Japan, Russia, Turkmenistan, and Ukraine.

Sulfur is important and the largest share in imports is in the fertilizer sector. Sulfuric acid imports are mainly made for the fertilizer industry. The pyrite import used in the production of sulfuric acid is also carried out by fertilizer manufacturers.



Mostly (93%) to produce sulphuric acid, which is the largest chemical produced in the world by tonnage - around 200 million tons/year.

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SINGLE CELL PROTEIN

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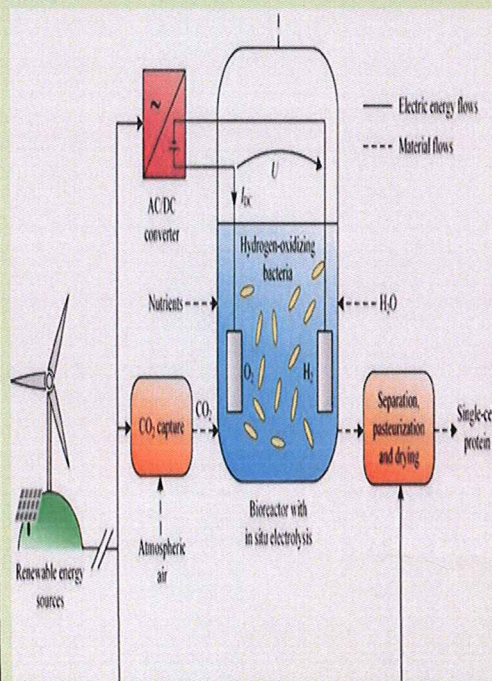
ABSTRACT

Single-cell proteins are the dried cells of microorganism, which are used as protein supplement in human foods or animal feeds. Microorganisms like algae, fungi, yeast and bacteria, utilize inexpensive feedstock and wastes as sources of carbon and energy for growth to produce biomass, protein concentrate or amino acids

INTRODUCTION

The term Single Cell Protein (SCP) refers to the dried microbial cells or total protein extracted from pure microbial cell culture (Algae, bacteria, filamentous fungi, yeasts), which can be used as food supplement to humans (Food Grade) or animals (Feed grade). Most of the developing countries of the world are facing a major problem of malnutrition. Due to rapid growth in the population deficiency of protein and nutrients are seen in human food and as well as animal feed. Single cell proteins have application in animal nutrition as: fattening calves, poultry, pigs and fish breeding. In food it is used as: aroma carriers, vitamin carrier, emulsifying aids and to improve the nutritive value of baked products, in soups, in ready-to-serve-meals, in diet recipes and in the technical field in: paper processing, leather processing and as foam stabilizers.

PROCESS FLOW DIAGRAM



INFORMATION

Selection of suitable strain

It is a very critical step as the quality of protein depends totally on the microbe that is used for the production.

Thus careful selection of the strain should be done.

Care should be taken that the selected strain should not produce any toxic or undesirable effects in the consumer.

Fermentation

It can be carried out in the fermentor which is equipped with aerator, thermostat, pH, etc. or in the trenches or ponds.

Microbes are cultured in fed-batch culture.

Engineers have developed deep lift fermentor & air lift fermentor.

Harvesting

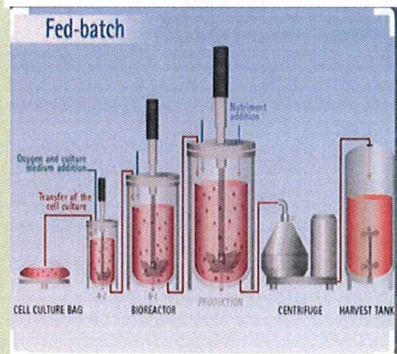
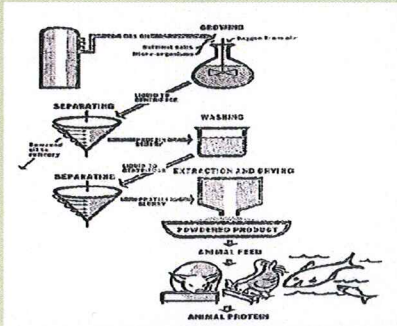
When the colonies of microbes are fully developed, they are then harvested.

The bulk of cells are removed from the fermentor by decantation.

Post Harvest Treatment

After harvesting, the cells are subjected to a variety of processes.

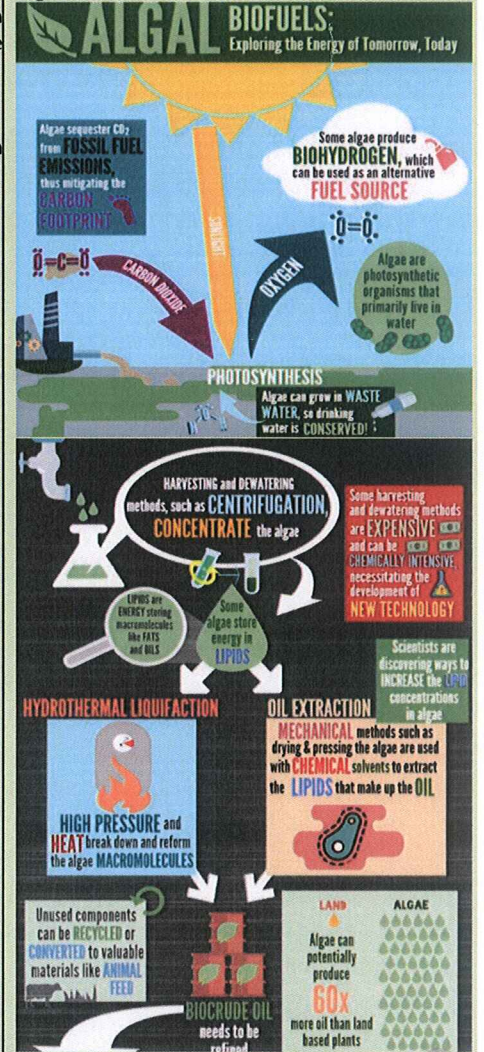
Post harvesting treatments include steps like separation by centrifugation, washing, drying, etc.



RESULT AND CONCLUSION

At present SCP production is in its infancy. One of the ways to enhance productivity and quality is genetic improvements of micro organisms.

Using microbial biomass as a food source deserves serious consideration because of insufficient World food supply and high protein content of most micro organisms.



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