NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY

A Project Report On

ORGANIC AND INORGANIC COMPOUNDS ON HOUSE SCHOOLS & ENVIRONMENT

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Any achievement, be it scholastic or otherwise does not depend solely on the individual efforts but on the guidance, encouragement and cooperation of intellectuals, elders and friends. We would like to take this opportunity to thank them all.

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DECLARATION

We Aashish Chand, Amrit Pant, Ashish Rai, Dikshyant Bam students of Computer Science of Science group of NAST affiliated to NEB, hereby declare that the work undertaken in this Educational tour entitled "**ORGANIC AND INORGANIC COMPOUNDS ON HOUSE SCHOOLS & ENVIRONMENT**" is the outcome of our own effort and is correct to the best of our knowledge. This work has been accomplished by obeying the social ethics; and it contains neither materials published earlier or written by another person/people nor materials which has been accepted for the award of any other degree of the school or other institution, except where due acknowledgement has been made in the document.

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CERTIFICATE

This is to certify that the report entitled "**ORGANIC AND INORGANIC COMPOUNDS ON HOUSE SCHOOLS & ENVIRONMENT**" is a report of the work carried out by our group under the guidance and supervision of Mr.DB Khadka for the partial fulfillment of secondary school grade XI certificate level degree of Computer Science by National Examination Board.

To the best of our knowledge and belief, this work embodies the work of candidates themselves, has duly been completed, fulfills the requirement of the ordinance relating to the Grade XI degree of the school and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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Table of Contents

INTRODUCTION

Any substance composed of identical molecules consisting of atoms of two or more chemical elements is called compound.

All the matter in the universe is composed of the atoms of more than 100 different chemical elements, which are found both in pure form and combined in chemical compounds. A sample of any given pure element is composed only of the atoms characteristic of that element, and the atoms of each element are unique. For example, the atoms that constitute carbon are different from those that make up iron, which are in turn different from those of gold. Every element is designated by a unique symbol consisting of one, two, or three letters arising from either the current element name or its original (often Latin) name. For example, the symbols for carbon, hydrogen, and oxygen are simply C, H, and O, respectively. The symbol for iron is Fe, from its original Latin name ferrum. The fundamental principle of the science of chemistry is that the atoms of different elements can combine with one another to form chemical compounds. Methane, for example, which is formed from the elements carbon and hydrogen in the ratio four hydrogen atoms for each carbon atom, is known to contain distinct CH_4 molecules. The formula of a compound—such as CH_4—indicates the types of atoms present, with subscripts representing the relative numbers of atoms (although the numeral 1 is never written).

Water, which is a chemical compound of hydrogen and oxygen in the ratio two hydrogen atoms for every oxygen atom, contains H_2O molecules. Sodium chloride is a chemical compound formed from sodium (Na) and chlorine (Cl) in a 1:1 ratio. Although the formula for sodium chloride is NaCl, the compound does not contain actual NaCl molecules. Rather, it contains equal numbers of sodium ions with a charge of positive one (Na^+) and chloride ions with a charge of negative one (Cl^-). (See below Trends in the chemical properties of the elements for a discussion of the process for changing uncharged atoms to ions [i.e., species with a positive or negative net charge].) The substances mentioned above exemplify the two basic types of chemical compounds: molecular (covalent) and ionic. Methane and water are composed of molecules; that is, they are molecular compounds. Sodium chloride, on the other hand, contains ions; it is an ionic compound.

Chemical compounds show a bewildering array of characteristics. At ordinary temperatures and pressures, some are solids, some are liquids, and some are gases. The colours of the various compounds span those of the rainbow. Some compounds are highly toxic to humans, whereas others are essential for life. Substitution of only a single atom within a compound may be responsible for changing the colour, odour, or toxicity of a substance. So that some sense can be made out of this great diversity, classification systems have been developed. An example cited above classifies compounds as molecular or ionic. Compounds are also classified as organic or inorganic. Organic compounds (see below Organic compounds), so called because many of them were originally isolated from living organisms, typically contain chains or rings of carbon atoms. Because of the great variety of ways that carbon can bond with itself and other elements, there are more than nine million organic compounds. The compounds that are not considered to be organic are called inorganic compounds (see below Inorganic compounds).

Within the broad classifications of organic and inorganic are many subclasses, mainly based on the specific elements or groups of elements that are present. For example, among the inorganic compounds, oxides contain O^{2-} ions or oxygen atoms, hydrides contain H^{-} ions or hydrogen atoms, sulfides contain S^{2-} ions, and so forth. Subclasses of organic compounds include alcohols (which contain the —OH group), carboxylic acids (characterized by the —COOH group), amines (which have an $—NH_2$ group), and so on.

ORGANIC COMPOUND

In chemistry, many authors consider that organic compound is any chemical compound that contain carbon-hydrogen or carbon-carbon bonds, although the definition of "organic" versus "inorganic" varies from author to author, and it is a topic of debate. For example, methane (CH_4) is considered organic, but whether halides of carbon without hydrogen (e.g. carbon tetrachloride CCl_4) are organic or inorganic varies from author to author.

Due to carbon's ability to catenate (form chains with other carbon atoms), millions of organic compounds are known. The study of the properties, reactions, and syntheses of organic compounds comprise the discipline known as organic chemistry. For historical reasons, a few classes of carbon-containing compounds (e.g., carbonate salts and cyanide salts), along with a few other exceptions (e.g., carbon dioxide, hydrogen cyanide), are not classified as organic compounds and are considered inorganic. Other than those just named, little consensus exists among chemists on precisely which carbon-containing compounds are excluded, making any rigorous definition of an organic compound elusive.

Although organic compounds make up only a small percentage of Earth's crust, they are of central importance because all known life is based on organic compounds. Living things incorporate inorganic carbon compounds into organic compounds through a network of processes (the carbon cycle) that begins with the conversion of carbon dioxide and a hydrogen source like water into simple sugars and other organic molecules by autotrophic organisms using light (photosynthesis) or other sources of energy. Most synthetically-produced organic compounds are ultimately derived from petrochemicals consisting mainly of hydrocarbons, which are themselves formed from the high pressure and temperature degradation of organic matter underground over geological timescales.[] This ultimate derivation notwithstanding, organic compounds are no longer defined as compounds originating in living things, as they were historically.

In chemical nomenclature, an organyl group, frequently represented by the letter R, refers to any monovalent substituent whose open valence is on a carbon atom.

INORGANIC COMPOUND

In chemistry, an inorganic compound is typically a chemical compound that lacks carbon–hydrogen bonds, that is, a compound that is not an organic compound. The study of inorganic compounds is a subfield of chemistry known as inorganic chemistry.

Inorganic compounds comprise most of the Earth's crust, although the compositions of the deep mantle remain active areas of investigation.

Some simple carbon compounds are often considered inorganic. Examples include the allotropes of carbon (graphite, diamond, buckminsterfullerene,etc.), carbon monoxide, carbon dioxide, carbides, and the following salts of inorganic anions: carbonates, cyanides, cyanates, and thiocyanates. Many of these are normal parts of mostly organic systems, including organisms; describing a chemical as inorganic does not necessarily mean that it does not occur within living things.

Friedrich Wöhler's conversion of ammonium cyanate into urea in 1828 is often cited as the starting point of modern organic chemistry. In Wöhler's era, there was widespread belief that organic compounds were characterized by a vital spirit. In the absence of vitalism, the distinction between inorganic and organic chemistry is merely semantic.

Modern usage

- The Inorganic Crystal Structure Database (ICSD) in its definition of "inorganic" carbon compounds, states that such compounds may contain *either* C-H or C-C bonds, but not both.
- The book series *Inorganic Syntheses* does not define inorganic compounds. The majority of its content deals with metal complexes of organic ligands.
- IUPAC does not offer a definition of "inorganic" or "inorganic compound" but does define inorganic polymer as "...skeletal structure that does not include carbon atoms."

EFFECT ON ENVIRONMENT

VOCs have a variety of direct and indirect impacts on people and the environment and the main problems refer to: harmful effects on people health and on environment through toxicity; carcinogenicity and other adverse effects; the damage to materials; the tropospheric photochemical oxidant formation; stratospheric ozone depletion; global climate change; odour released.

Many VOCs can cause damage to materials near their point of discharge, as a consequence of oxidizing or corrosive properties. VOCs can indirectly contribute to material damage by the formation of ozone which is a very strong oxidizing agent and can attack materials such as natural and synthetic rubber, textiles and resins, or those used in surface coatings. Accelerated degradation of buildings occurs through damage to the protective layers. On the other hand, between VOCs and nitrogen oxides (NOx) reactions occur in the presence of sunlight and result in photochemical oxidants (including ozone, peroxyacyl nitrates, peroxides, etc.) . These chemicals can affect human health and are harmful to the environment, increasing harmfulness of NO to the environment by its oxidation to NO_2.

Inorganic pollutants are the compounds of inorganic by-products arising due to radiant energy and noise, heat, or light. Examples of inorganic pollutants arsenic, cadmium, lead, mercury, chromium , aluminium etc. Inorganic pollutants pose a high risk on health and environment by contaminating water, soil, and air. Many a times, the inorganic pollutants are induced directly into the water sources through anthropogenic contribution. Inorganic contaminants like arsenic, iron, chromium and manganese commonly occur in nature and often end up in our surface and ground waters. Some occur as a result of manmade pollution such as perchlorate, and others like nitrates occur because of interactions between nature and pollution.

CONCLUSION

Any substance composed of identical molecules consisting of atoms of two or more chemical elements is called compound. They are two types: organic and Inorganic compound. VOCs have a variety of direct and indirect impacts on people and the environment and the main problems refer to: harmful effects on people health. The Government will consider implementing further measures to control other VOC-containing products which are not being controlled by the Regulation and we should avoid using aerosol consumer products such as hairsprays, air fresheners, deodorants, and insecticides that often use VOCs as their propellants. For inorganic pollutants, an acidic aqueous solution which may contain surfactants is typically used as the extraction fluid. Soil pH is neutralized with base following removal of the pollutant. For organic pollutants, the extraction fluid is likely to be an organic solvent.

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