Submitted by:

SUBMITTED BY: Teresita C. Ojastro SUBMITTED TO: Mrs. Pilar M. Macabinguil MALOH PROVINCIAL COMMUNITY HIGH SCHOOL DUMAGUETE CITY NEGROS ORIENTAL 6200 Mrs. Pilar M. Macabinguil ENGLISH IV Teacher MPCHS Madam: In partial fulfillment of the requirement in ENGLISH IV, I hereby present to you my term paper entitled “ What is Radiation? " This term paper presents a research study on the importance about radiation and how it affects the whole world. In doing a research paper is a big task that must be given more efforts, time and patient. It will not be built without references. I always think of doing this not for the benefits for other but for my own. I learn to be more confident, more competitive and more initiative for I know I have my inspiration who gave me everything I need. The strength, courage, will and determination to conquer my goals in life and to finish my accomplishment as student. I was to give my best with the help of our almighty God. So madam, I hope that this term paper will merit your approval and prove to be satisfactory. Please consider my errors and I’m sorry for I disappointed to you. Respectfully yours, TERESITA C. OJASTRO ACKNOWLEDGEMENT Now, in behalf of such difficulties and trials, I would like to acknowledge the People who were re always there behind me and supported me in making this term Paper. Once and foremost, I would like to give especial thanks to our almighty God for He serves as my inspiration and great provider as well. He gives me strength to face me challenge that I’ve encountered. I to God who is too magnificent to grant the blessing I need. I hereby express my thanks to Mrs. Sandra Omongos for giving us opportunity to learn, for giving us information and knowledge in making this term paper. It helps a lot for us that if we already in college, we already know on how to make a research paper. Thank you very much madam for the effort in

explaining to us everything. I also give thanks to my beloved parent, sister and brother, grandma, and auntie who really gives there supports, emotionally, physically, mentally, spiritually, and financially. I give those thanks as they are the best parent, aunties and uncle ever. With them, I grew graceful with to God. They are one of my inspirations in complying this research paper. Grateful thanks to my friends, classmates, parents, grandma, aunties and uncle, teacher as well, who were very kind to me, who courage me in this term paper. To my especial auntie Miss ANNABELLE OJASTRO who is always there, giving advice, help me to be strong and be a better person, Thank you very much. I shall never forget you. INTRODUTION We often associate the word radiation with sunlight, x-rays, and nuclear power plants. Radiation is simply energy travelling through space and sunlight is the most familiar of radiation. Life’s on earth has evolved and developed with an ever present background radiation. In fact, in both solar and nuclear radiation have always been there. Despite this people, fear this hazards that the application of nuclear radiations pose to human life and to the environment. The use of nuclear energy in power generation may have been temporarily shelved in our country due to the controversy in the mid-1980 but this does not make our country “ Nuclei-free". The controversy revolves mostly around the risks involved versus the benefits derived from these applications. However, for you to decide for or against the use of these applications, you will need to learn about radioactivity and nuclear energy. TABLE OF CONTENTS I. TITLE PAGE II. ENDORSEMENT LETTER III. ACKNOWLEDGEMENT IV. INTRODUCTION V. TABLE OF CONTENTS VI. BODY OF TERM PAPER A. What is radiation? B. Types and Properties of Nuclear Radiation C. Radioactivity D. Discovery of Radioactivity E. Radioactive

Isotopes F. Radioactive Half-Life G. The kinds of Radioactive Decay H. Radioactive Dating I. Two Methods use in Radioactive Dating J. Radiator Detector K. Radiation Application L. Food and Agriculture M. Diagnosis and Therapy N. Diagnostic use of Radioisotopes VII. CONCLUSION VIII. BIBLIOGRAPHY WHAT IS RADIATION? RADIATION- is the transfer of thermal energy space. Any object with thermal energy emits radiation. If you've travelled down roads on a very hot day, you may have been seen evidence of this radiation. The air just above the hot pavement shimmers and shakes as heats radiates from the surface. This radiation is very much like radio and television waves. Thermal energy transfer in the same way that radio and television signal travels from the broadcasting to your home. TYPES AND PROPERTIES OF NUCLEAR RADIATION Scientist found three different kinds of radiation given off by isotopes of radioactive substances. These are the following: 1. ALPHA (âˆž) PARTICLE RADIATION- it consists of two protons and two neutrons, or, the nucleus of a helium atom. They carry a positive charge of +2e. It is a helium nucleus. Its penetrating power is not very great. It can be stopped by a thin sheet of paper. 2. BETA (áºž) PARTICLE RADIATION- Beta radiation consists of electrons. A beta particle is emitted from the nucleus when a neutron becomes a proton and vice versa. 1 The beta particle carries a charge of + e. It is an electron created during the decay of a neutron nucleus. It can travel at nearly speed of light. The high speed of beta particle makes it more penetrating than an alpha particle 3. GAMMA(Y RAY PROTONS-It is form of high energy electromagnetic radiation that travels at the speed of light. A gamma ray is a bundle of light energy. It has the most penetrating radiation given off by radioactive elements and it's not affected by magnetic fields. It has no electrical charge. RADIOACTIVITY

Radioactivity is a spontaneous decay of atomic nuclei in the emission of particle and energy. Radiation and radioactivity are world’s that produce anxiety but we often overlook the many beneficial uses to which radiation can be put. For instance, exposure to high energy radiation can cause cancer. Yet precisely the same sort of radiation can be useful in the diagnosis of cancer and even in the treatment of cancer. Light and heat rays from the sun are common forms of radiation. Energy is given off when electrons in an exiled atom jump from a higher energy level to a lower energy level. This energy is emitted in the following forms. X-ray, radiation, ultraviolet radiation or light. An atom becomes excited when energy is added to it. However, there are some substances which yield radiation. These are called radioactive substances and it comes from the nuclei of an atom. DISCOVERY OF RADIOACTIVITY In 1985, William Roentgens discovered x-rays are radiation produced when high energy electron hit a certain material. He also discovers that x-rays can generate by directing a cathodes ray (beam of fast electrons) against the wall of the glass tube. In 1986, a French scientist, Henry Becquerel did an experiment to determine whether fluorescent materials give off light as well as x-rays. Becquerel wrapped a photographic plate in a thick black paper. He placed a crystal of the fluorescent uranium salt on the top of the paper. Then, he exposed the set up to the sunlight. He found a foggy photographic film, confirming his prediction that his runny sulphate did emit radiation. RADIOATIVE ISOTOPES Isotopes are atoms whose nuclei have the same number of protons but different number of neutrons. We distinguish between the different isotopes of hydrogen by 1H, 2H and 3H where the lower number is atomic number and the upper number is the atomic mass number. The common isotopes of hydrogen, 1 1H, is a

table element. So is the isotopes 1 2H, called deuterium “ Heavy Water" is the usually given to H2O in which 13H, called tritium, however, is unstable and undergoes beta decay. This is the radioactive. And some are not. RADIOACTIVE HALF-LIFE Radioactive isotopes decay at different rates. The radioactive Decay rate measured in terms of a characteristics time, the half-life. The Half-Life of the radioactive materials is the time required for half the atoms of radioactive isotopes of an element to decay. This term is also use to described Decay process in general. For example, Thorium-234 has a half-life of 24d. This mean that if we start with a 100g sample of TH-234, after 24d 50g will have changed into other atoms and 50g of Th-234 will remain. THE KINDS OF RADIOACTIVE DECAY Physicist who studied radioactive rocks and minerals discovered three kinds of radioactive decay, which are the following: 1. ALPHA DECAY Some radioactive decays involve the emission of a relatively large and massive practice compo red by two protons and two neutrons. Such as particle is exactly the same as the nucleus of helium, 4 atoms. It is called an alpha particle, and the process by which it is emitted is called alpha decay. It has an equation: ZAXâ†’Z-4A-4Y+24He Parent nucleus Daughter nucleus + particle (helium nucleus) 2. BETA DECAY The second kind of radioactive decays, called beta decay, involves the emission of the electron. In general for beta decay: ZAXâ†’ZA+Y+-10e Parent nucleus Daughter nucleus + áºž particle (electron) 3. GAMMA RADIATION The third kind radioactivity called gamma radiation is different from alpha and beta decay. A “ gamma ray" is simply a generic term for a very energetic proton which is one unit of electromagnetic radiation. It is represented by: ZAXâ†’ZAX+00y Parent nucleus Daughter nucleus + gamma particle All magnetic radiation comes from the acceleration of charge particles. That is

happen in gamma radiation. RADIOACTIVE DATING An entirely different use of radioactivity is radioactive dating. Radioisotopes are used as “ Nuclear Clocks" to determine the age of objects on an archaeological, geographical, and astronomical time sale. TWO METHODS USED IN RADIOACTIVE DATING 1. URANIUM DATING It is used to determine the age of the earth, the moon, or the solar system. Isotopes with the long half lives like U-238, U-235, Th-232, K-40 and Rb-87 are used. With this method, scientist has estimated the age of the oldest rock on the earth to be four billion years old. Since, Uranium has a very long half-life; the amount of lead produced by its decays over a period of thousands of years is virtually undetectable. That uranium dating not used relatively younger objects. 2. CARBON DATING It uses the decay of the carbon-14 isotope. Carbon dating techniques has become an indispensable tool for modern archaeologists. The age of artefacts from archaeological sites can be determining using carbon dating techniques. The oldest caves in Palawan were found to be around 40, 000 years old by carbon dating. Carbon-14 is used in determining the age of once living things, to calculate the age of non-living things, Uranium dating is used. RADIATION DETECTORS Unlike visible lights, the presence of radioactive substances within and around us cannot be detected by our senses. The following are the radiation detector devices: 1. GEIGER COUNTER A Geiger counter consist of a central wire in a hollow metal cylinder filled with low pressure gas, an electrical voltage is applied across the cylinder and wire so that the wire is more positive than the cylinder. 2. CLOUD CHAMBER A cloud chamber shows a visible path or ionizing radiation in the form of Fog trails. It consists of cylindrical glass chamber close at the upper and by a glass window and at the lower and by a movable piston. 3. BUBBLE CHAMBER The

particles trails seem in a bubble chamber are minute bubbles of gas in liquid hydrogen. The liquid hydrogen is heated under pressure in a glass and stainless steel chamber to a point just short to boiling. 4. SCINTILLATION COUNTER A scintillation counter uses the fact that certain substances are easily excited in emit light and when charge particles are or gamma rays pass through them. Tiny flashes of light or scintillation are converted into electric signal by special photo-multiplier tubes. A scintillation counter can measure the energy of charged particles or gamma rays absorb the detector. Ordinary water, when highly purified, can serve as a scintillator. RADITION APPLICATION Today, scientists continue to look for applications of radioactivity and nuclear energy to benefits mankind. A. FOOD AND AGRICULTURE Ionizing, radiation has been use for the several decades to produce new genetic lines of rice, sorghum, garlic, wheat, bananas, beans, avocado, and peppers. All of which are more resistant to rests and more adaptable to harsh climatic conditions. Aside from the used of radioisotopes is tracer studies, there at least three major areas where ionizing radiation is used in agriculture: 1.) Mutation plant breeding, 2.) Food irritation; and 3.) Sterile infect technology. B. DIAGNOSIS AND THERAPHY Radiation is a powerful tool in medicine especially as an aid to diagnosis. In medical diagnosis the strategy in to keep the radiation dose as low as possible while gaining the most information. How is this possible? By using small amounts of short lived radioactive isotopes injected into the patient’s body. A technique called radio isotopic tracing. DIAGNOSIS USE OF RADIOISOTOPES 1. Bone and thyroid scan 2. Radio-immunoassay (RIA) Technique 3. Skeleton and heart muscles detectors Radiation therapy is commonly used to treat cancer. Treatment of cancers, the purpose is to cause damage particularly to

cancer cells. CONCLUSION I conclude that making this term paper really requires effort, time, knowledge, and of course financial effort aspects. It is not easy task. It is very challenging for us, for me because through research in different sources, our knowledge will expand. And there is learning. I used to choose “ Radiation" because I really want to know what it all is About, its benefits, and hazards, how it is related to our planet earth, and what is behind. As I go through, I learned some more and it helps me a lot. Coz I know in College, we were going to make this also. I was hesitating to make a research paper because I was thinking it’s hard to do. But when I try my best, I was proven myself wrong. It is important to make this Because I want to learn and besides it’s a requirement that should e accomplish. In the study of “ RADIATION" I found of that there were kinds, Benefits and hazardous. At least we can aware of what is it all about. And now because I learn, So I am accomplishing now my term paper. BIBLIOGRAPHY Physics Science and Technology Textbook for Fourth Year. Philippines: SD Publication, Inc, 2004 Aldridge, Bill M. S, et. al. Science and Interaction. USA: Glencoe Division of Mc Millan/Mc Graw-Hill School Publishing Company, 1993. Buffa, Anthony J. And Wilson, Jerry D. Physics Fourth Edition. Singapore: Pearson Education, Inc., 1994. Heath, Robert W.; Macnaughton, Robert R.; and Martindale, David G. Fundamentals of Physic. Canada: D. C. Health Canada Ltd., 1979 Hewitt Paul G. Conceptual Physics, United States of America: Pearson Prentice Hall Inc., 2006 Hewitt Paul G. Conceptual Physics Ninth Edition. USA: Pearson Education Inc., 1956 Ocampo, Jorge R. And Santos, Gil Nonato C. General Science for High School. Rex Book Store, Inc., 1963. Pabellon, Josetina L., and Tubal , Gemelita C. Science and Technology for a Better Life Series. Physics Second Edition. Philippines: Duiva Scholastic

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