Waves and how they affect life essay sample

Life

Waves effect our everyday life in many ways. Waves are very interesting ways to travel, and we don’t mean surfing! Many things we use every day involve waves. Lights and sounds are examples of everyday uses that travel by wave. On the spectrum of light there are waves listed which are X-Rays, UV-Rays, and Infrared. Some of these are harmful to life, and some of these are helpful to life, where mostly they all serve both of these purposes. Another type of wave, though not on the spectrum because it is not light, are sound waves. Weather the wave is a sound wave or a light wave it consists of the basic similar parts. These waves all contain wavelength and frequency. A longer wavelength will mean a smaller energy level, as to where a shorter wave length makes the wave more compact and it will have a higher energy level. Some of the energy levels can become so high that they may become harmful. Other waves may have such a low energy that they are invisible or silent to humans without man-made devices. One small change in a wave can make a world of difference in its entire energy outcome. Waves are very interesting items that effect our lives both positively and negatively.

UV. Radiation in sunlight is divided up into three separate parts which are based on wavelengths, or more commonly read as energy. These parts are UV-A , UV-B., and UV-C.. UV-A. is 320-400 nanometers. In general shorter wavelengths are more harmful to living organisms such as people. ‘ A. can cause skin damage and may cause Melanomatous skin cancer. UV-B. is 280-320 nanometers. ‘ B. increases in the summer and is the most common cause of sun burn and most commonly skin cancer. UV-C. is the strongest of the three rays. ‘ C. is below 280 nanometers. ‘ C is the most dangerous form

of UV. Rays, however, UV-C also is so powerful that it kills bacteria and viruses. Because of this, it is used for sterilizing surfaces. Much of ‘ B and most of ‘ C is absorbed by the earths atmosphere before it can reach the earth’s surface. Much of what is not absorbed this way is absorbed by ordinary window glass or impurities/ particles in the air (e. g., water, dust, and smoke) or is screened by clothing. UV-Radiation is not entirely harmful, though many fear it, it is a necessity to life. UV-Rays, when burning the skin, produces vitamin D which humans and animals need for good health.

Cancer is a very serious disease that may be caused by ultra violet rays. The types of UV. Rays are UV-A. , UV-B., and UV-C.. UV-B. has a shorter wave length than UV-A. and UV-C.. It produces more energy and may be considered the Cancer causing wave. The only natural prevention people have, to protect themselves from cancer, is the O-Zone Layer. Since the o zone is depleting the occurrence of cancer (especially skin cancer) is increasing rapidly. It is estimated that for every one percent decrease in the o zone layer, there is a six percent increase in the incidence of non-melenoma skin cancer such as basal cell cancer and squamous cell cancer (Leffell 94). Now scientists believe cancer can be caused not only by the higher intensities of ultra violet rays, but by low intensity UV-Rays as well. This may mean that a person has a risk of receiving cancer from fluorescent or halogen lamps at home. Though there is no scientific evidence of this yet some scientist feel it may be a scientifically proved cause of cancer in the future.

An X-ray is a penetrating electromagnetic radiation, having a shorter wavelength than light, and produced by bombarding a target, usually made

of tungsten (Encarta 98). In short X-rays are the rays used to penetrate through the skin and produce and image of the bone structure. X-rays are produced whenever high-velocity electrons strike a material object. Much of the energy lost in the electrons is lost in heat. The rest of the energy produces X-rays by changing target's atoms as a result of the impact. The X-Rays made from this contact have no more energy than the kinetic energy of the electrons that produce them. X-rays were discovered accidentally by a man named Wilhelm Conrad Roentgen. Roentgen was a German scientist and discovered X-rays while studying cathode rays with a high-voltage, gaseous-discharge tube. Although, this tube was in a black cardboard box Roentgen saw a platinocyanide (a salt of platinocyanic acid) screen, just lying nearby. This emitted fluorescent light whenever the tube was in operation. After further scrutiny and experimenting he determined that the fluorescent light was caused by invisible radiation with a more penetration nature than UV-rays. This was later to be called X-Rays.

Infrared Radiation is another light that travels by wave. The primary source of infrared radiation is heat or thermal radiation. Anything with a heat above absolute zero (0 degrees Kelvin) radiates in the infrared. Objects people usually seem to think are extremely cold, such as ice, emit infrared. When the object is not hot enough to permit visual light it will usually be emitting most of its light in the infrared. One example of this is charcoal. Charcoal may not give off light, but it does give off heat which is located in the infrared . The warmer the object is the more infrared radiation it will set off or emit. Humans at normal body temperature, radiate most strongly in the infrared at a wavelength of about 10 microns (A micron is the term

commonly used in astronomy for a micrometer or one millionth of a meter) (Hermans-Killam). Infrared Rays are used to obtain pictures of distant objects obscured, or made fuzzy, by atmospheric haze. This is because visible light is scattered be haze and infrared radiation is not. The detection of infrared radiation is used by astronomers to observe stars and nebulas that are invisible to us in ordinary light or that emit radiation in the infrared portion of the spectrum.

Infrared radiation was discovered and developed around 1880. Infrared photography has today proven to be a diagnostic tool in medical and agricultural aspects. These techniques reveal pathogenic conditions that are invisible to the naked eye and X-ray plates. Infrared devices were also used during WWII. During this war, and still today, infrared helped sharpshooters to see their targets in total visual darkness. This is able to be done using infrared rays because an infrared lamp that sends out a beam of infrared radiation, also known as black light. This is also made possible by using a telescope receiver that picks up returned radiation from the object and converts it to a visible image. These rays are often seen during Halloween, and make white seem that much whiter. Infrared radiation is yet another light which travels by wave, but is yet invisible without man-made help.

Other waves rather than light waves are sound waves. There are 4 major parts to a sound wave. These parts are Wavelength, Period, Amplitude, and Frequency. Wavelength is the horizontal height of one wave cycle. The period of a wave is the time taken to get through one complete wave cycle. It may be easier to think of a period as the amount of time it takes to complete a wave length. The amplitude of sound is represented by the

height of the wave. When a sound is loud the amplitude is higher, which may also say that when the sound is soft, the amplitude is smaller. A decibel is a scientific way of measuring the intensity of sounds. The softest sound that a human can here is known as 0 point. when the sound is double that it goes up by six. To set an example of the loudness of a decibel, the average human speaks at 60 decibels. Frequency is measured a hertz. These indicate the number of cycles per second. An example of this was found at www. library. thinkquest. org which states, If a speaker’s diaphragm is vibrating back and forth at a frequency of 900 Hz, then 900 condensations are generated every second, each followed by a rare-faction, forming a sound wave whose frequency is 900 Hz.

How a brain translates the wave in ones head is called the pitch. The higher the frequency of a sound wave, the higher the pitch. Sound can travel at different speeds depending on its medium (what it is traveling through). There are 3 mediums to chose from. (liquid, gas and solid). From slowest to fastest sound waves travel through gasses, then liquids, and then solids. Temperature will also affect these waves. Through gasses a sound wave will travel only when molecules collide with each other. This is why it makes sense that the speed of sound has the same magnitude as the average molecular speed between collisions. Through room temperature sound travels at 343 meters per second or 767 mph this is about 12 times our speed limit in a car. Sound travels faster through liquids than gasses because molecules are more tightly packed. In fresh water sound travels at 1, 482 meters per second or 3, 315 mph. This is over 4 times faster than air. Solids are even more tightly packed than liquids. Sound waves travel over 17

times faster through steal than air. This would mean the sound wave would be traveling at 5, 960 meters per second or 13, 332 mph. Still, the speeds of ALL solids are not faster than ALL liquids.

There are ways to prevent these high energy, high speed waves from making a poor impact on a persons life. Special ear plugs are made for high pitched sounds and loud sound such as shooting guns which can protect your ears. Anything moving at 13, 332 mph must hurt in some way! There are also ways to protect a persons skin from light waves. Some of these are natural and some are unnatural. The o zone layer is an example of a natural skin cancer prevention. Sun block and sun screen are examples of man made preventions of cancer. One problem with these is that none are 100 percent full proof. New ways to help treat or prevent the affects of waves are being thought of every day. But, the harm seems to come quicker than the cure.

Experts in the effects of these waves recommend using protection with SPF sun protection of 30 or higher. SPF 30 would allow a person to be in the sun 30 times longer than the could usually without protection before burning. Aimee Lee Ball comments about the Lethal Sun and its affects to our skin. Alyssa Burger believes that, Using sun protection during the first 18 years of life will prevent most or all cancers by a staggering 78 percent. Another way to prevent the harm of these waves is to be in them more often. The more use to the waves impact a person is, the less of an impact they will make on the skin. The less a person visits these waves the more vulnerable they will become to their harm. There are many ways to help prevent the harm of

waves, and when these ways are practiced the waves are even more exciting and enjoyable to take advantage of.

All waves are a huge benefit to our lives, though some may also cause harm. Waves are complex ways for light and sound to travel. Each wave has an incredible amount of energy. Some have more energy and some less, which all depends on the wavelength. Different wave lengths can cause a change in the brightness of a light, the pitch of a sound, or the amount of harm it causes. Waves travel at rates of which most people could never comprehend. They travel through all 3 mediums, some stopped by others that one can pass through and vise-versa. There are ways to prevent the harms of some of the rays, such as sun block for UV-Rays and ear plugs for high pitched sounds. Natural ways to prevent the harms were also provided for us by nature, such as the particles in the air (such as dust and moisture) or even the o zone layer. Humans have discovered many interesting facts about waves and how they affect our lives and we will continue to discover more and more as time goes by.