

# The potential effects of a depleted ozone layer essay



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“ And God said, let there be light and there was light and then God saw the light, that it was good ” ( Genesis 1: 3-4 ). Undoubtedly, light is good.

Without light man could not survive. Light is the ultimate cosmic force in this universe allowing man to progress and flourish.

In the form of heat, light from the sun warms the Earth. Light, also, is the single most important factor influencing the growth and development of plants. Photosynthesis, a process by which plants incorporate light from the sun, allow plants to botanically grow and survive. Certain forms of light are harmful and thus can be said are ‘ bad’.

A natural umbrella called the ozone layer protects the Earth and its inhabitants by screening out this harmful light.

For “ millions of years ozone has been protecting the earth ” by absorbing ultraviolet or bad radiation from the sun ( Rowland, 1992, p. 66 ). This natural umbrella protecting mankind has recently suffered the effects of industrialized society. This “ ozone shield is dissipating ” and the cause is laid primarily to man - made chemicals ( Bowermaster et al, 1990, p.

27 ). If enough of these man - made chemicals are released, “ the ozone layer would be weakened to such an extent that it does not filter out the sun’s invisible and dangerous ultraviolet rays ” ( Jones, 1992, p. 36 ).

Such a scenario would drastically alter society and the environment.

Ozone depletion has been described as “ potential catastrophe ” and “ a planetary time - bomb ” ( Way, 1988, p. 9 ). The four main areas affected by a depleted ozone layer and thus by the corresponding increase in harmful

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ultraviolet radiation are agriculture, wildlife, the environment, and human health. A depleted ozone layer has a profoundly negative and potentially devastating effect on humanity and its surroundings. From an agricultural perspective, a diminished ozone layer poses great risks.

Since man's evolution from 'man the hunter and gatherer' to 'man the food producer', mankind has grown ever more dependent on his surroundings. In the case of food production man relies greatly on these surroundings. The land on which man attempts to grow food for himself, and certainly for others as well, has sufficed for thousands of years. The crops grown on his land have provided thousands with food to eat in the ancient world, millions with food to eat in the medieval world, and billions with food to eat in the present world.

Regrettably, there have always been times of hunger and shortages. More frighteningly, in the present world man is confronted with a population boom which is burgeoning near the six billion mark.

It is now more important than ever to protect, maintain, and hopefully increase the amount of food grown. One of the drawbacks of industrialization has been the significant depletion of the ozone layer. This depletion could have an incredibly devastating impact on the world and more specifically agriculture. In general, "plants are quite sensitive and fragile when confronted with ultraviolet increases" (Zimmer, 1993, p. 28). Words such as sensitivity and fragility only add to the urgency of the possible agricultural holocaust.

One agricultural scientist remarked, " soybeans, tomatoes, tobacco, potatoes, corn, beans, and wheat are all especially sensitive to UV light " ( Jones, 1992, p. 39 ). Since most of the mentioned crops are considered cash crops the economic aspect of lower crop yields could also spell disaster.

Food supplies are surely in jeopardy when taking in to account that " more than two - thirds of the plant species - mainly crops - tested for their reaction to ultraviolet light have been found to be damaged by it " ( Lean et al, 1990, p. 97 ). An increase in ultraviolet light radiating towards plants accelerates the pace at which man must decide what to do with the dilemma of a booming and more importantly hungry population.

Concedingly, plants, as any element of life, have been known to adapt to contemporary and dangerous changes in its surroundings but it cannot be dismissed that " UV radiation can also mutate the genes of plants " which are the fundamental building blocks of all life ( Bowermaster et al, 1990, p. 44 ). Interference with the foundations of life can also lead to calamity and more importantly a yet foreseen and unknown calamity. In 1988, then U. S.

Interior secretary Donald Hoedel " proposed coping with ozone depletion by simply wearing sunglasses and hats " but what Hoedel doesn't understand is that plants lack the ability to wear such human - like possessions (Bowermaster et al, 1990, p. 31 ).

With an ever - increasing population it is critical to act or react to the ozone depletion saga in mankind's midst. More importantly there are and foreseeably will be even more heralded environmental issues which need to be addressed. The ozone depletion story can be seen as a warning sign to <https://assignbuster.com/the-potential-effects-of-a-depleted-ozone-layer-essay/>

humanity exposing the fact that the earth can only endure a certain amount of hardship before it will surrender to the onslaught of industrial might. One author explains the gravity of the situation by pointing out, " There's only one atmosphere and once that is gone who knows " ( Cox, 1994, p.

546 ). Agriculturally, a depletion in the ozone layer could lead to economic and societal ruin for many. In addition to having a profound potential effect on agriculture, a depleted ozone layer affects wildlife in the same indiscriminate manner. Since ozone depletion leads to increases in harmful UV light, it comes as no surprise that this ' bad' light would affect the various forms of life on Earth other than plants. Marine life is currently the most affected by increases in UV light associated with ozone depletion. "

There has been speculation that this UV could cause a population collapse in the marine food chain, especially in phytoplankton " ( Zimmer, 1993, p.

28 ). Phytoplankton, are free floating aquatic plants which " are the mainstay of the oceanic food chain " ( Lemonick, 1992, p. 43 ). Concerning phytoplankton, " it has been shown through laboratory experiments that UV-A and UV-B do indeed inhibit phytoplankton photosynthesis " ( Zimmer, 1993, p. 28 ). Since phytoplankton occupy such a strategic position in the aquatic food chain, interference with phytoplanktic photosynthesis affects the growth, development, and reproductive aspects of all marine life.

Scientists agree that " right now, the lowest levels of life are being hit hardest " by the increase in ultraviolet light ( Rowland, 1992, p. 36 ).

If the lowest levels of marine life, being phytoplankton, are oppressed by increases in UV light, species relying on the phytoplankton for sustenance cannot be far behind in suffering the effects of a ravaged food chain. One of the species which relies on the phytoplankton is krill which are shrimplike - vegetarians of the seas which in turn are a principle source of sustenance for whales and the like.

If krill were to be harvested as a food resource for mankind it has been said that, " a krill harvest would provide us with the same amount of food as 10% of the global annual fish catch " ( Boisseau, 1987, p. 4 ). Clearly, if the location of krill were more available to man, than being mostly confined to polar water regions, another principal food resource could be added to man's long list of them. Another important feature involved in a decline in phytoplankton numbers and productivity is the fact that " phytoplankton helps produce and recycle the world's oxygen supply " ( Bowermaster et al, 1990, p.

40 ).

An increase in ultraviolet light can thus endanger an entire ecosystem without necessarily killing off the masses. By altering the respiratory balance in an ecosystem a variety of species would be affected. Furthermore, the same oxygen recycled by phytoplankton is breathed by all animals and man himself thus adding to the importance of the threatened oceanic food chain. A weakened ozone umbrella could also have a tremendous impact on wildlife.

Moreover, in support of devastating impact on the crops and animals, a diminished ozone layer has been associated with environmental damage and concern. The potential effect on the earth's climate systems and weather is another negative aspect joined at the hip with a weakened ozone shield. The ozone layer is located in the stratosphere " 15 - 50 km above the earth's surface " and plays a key role in the development of weather patterns ( Boisseau, 1987, p. 7 ). " When stratospheric ozone intercepts UV light, heat is generated.

This heat helps create stratospheric winds, the driving force behind weather patterns " ( Lemonick, 1992, p. 42 ).

By changing the amount of ozone in the atmosphere, through man - made chemical interference, the regular wind patterns are affected. Ultimately, " a diminished ozone layer will help heat up the atmosphere, adding to the threat of global warming " ( Bowermaster, 1990, p. 33 ). Convincingly, climatologists have noted that, " Weather patterns have already begun to change over Antarctica " ( Lemonick, 1992, p.

42 ). " Virtually all the CFCs and halons that have ever been released are still in the atmosphere " ( Jones, 1992, p. 39 ). This means that all the potent ozone destroyers which indirectly cause an increase in harmful ultraviolet light are still in the atmosphere accomplishing their chemically destructive tasks.

Moreover, this destructive process will continue in the sky for the CFC's and halon's " atmospheric lifetime of between 70 and 150 years " ( Brune et al,

1992, p. 38 ). The changing weather patterns and global warming will continue to exist as long as this ozone depletion is still occurring.

Ozone replenishes itself naturally but " it will take the entire 21st century to return to pre - CFC levels " ( Rowland, 1992, p. 67 ).

Ozone destruction has left an indelible mark on the atmosphere and will continue to do so for at least another century. The depletion of the ozone layer has a potential catastrophic effect towards the environment.

Furthermore, a diminished ozone layer provides man with another of his already many viable health concerns. Man continually strives to better his health and tries desperately to stave off his self - acknowledged mortality. One of the many health concerns brought to light in wake of the ozone depletion story is cataracts.

Cataracts is a medical condition in which the lens of the eye deteriorates causing blurriness and even blindness. Statistics show that " if the ozone layer is depleted by 1%, 100, 000 people worldwide would be blinded " ( Brune et al, 1992, p. 39 ). In addition to higher rates of cataracts, rates of skin cancer have also been linked to increased ultraviolet light in recent years. "

On a population wide - basis the connection between ultraviolet exposure and an increased risk of skin cancer have been established beyond question " ( Cox, 1994, p. 546 ).

Admittedly, some of the recent increases in skin cancer rates can be attributed to the growth in popularity and fascination with tanning and sun



bathing but another, and more convincing statistic states, " In the 1930s, Canadians had one chance in 3500 of getting melanoma. In the 1990's, the chance is one in 100. " ( Brune et al, 1992, p. 38 ) Most forms of skin cancer are not serious, but " melanoma is fatal but in only 20 percent of the cases. " ( Rowland, 1992, p.

66 ) One doctor simplifies the matter by noting, " Increased UV radiation has a negative effect on all biology. " ( Boisseau, 1988, p. 8 )

All biology having been pertained to all life without consequence to size, type, or location. Another negative effect of increased ultraviolet radiation is its link to immunological drawbacks. According to the World Resources Institute, " A diminished ozone layer may also make people more vulnerable to a variety of infectious diseases like malaria " ( Bowermaster et al, 1990, p. 31 ).

Scientists agree that they " already know that ultraviolet light can impair immunity to infectious diseases in animals " ( Lemonick, 1992, p. 41 ). Since it has been determined that immuno - effects have occurred in animals it cannot be preposterous to assume a similar effect can be set upon humanity which is genetically and historically, according to Darwinists, related to the animal kingdom. Immunological processes are carried out at the cellular level just as any other life processes supporting the notion that " ultraviolet light carries enough energy to damage DNA and thus disrupt the working of the cells " ( Lemonick, 1989, p. 41 ).

Furthermore, a U.

N. research team stated increases in ultraviolet light " speed up the onset of the AIDS virus " ( Brune et al, 1992, p. 32 ). Ultraviolet light reduces immune efficiency by " suppressing the production of antibodies, helping cancers to be established and grow and increasing the susceptibility to herpes and leishmaniasis " ( Lean et al, 1990, p.

97 ). A suppressed immune system is just one more of many health concerns linked conclusively to a depleted ozone layer and the resultant UV increases. The medical ramifications of increased UV light is another effect linked to the ecological ' lit fuse' we call ozone depletion. Ozone layer depletion possesses a potentially catastrophic cargo of harmful ultraviolet light concerning mankind and the planet Earth.

Agriculture, wildlife, the environment and human health are all aspects of the planet Earth which are affected by a dramatic loss in atmospheric ozone stability.

In the name of progress and societal advancement, mankind has released millions of tonnes of potent ozone destroyers in the last sixty years. The immediate scientific result of a depleted ozone layer is an increase in the amount of harmful ultraviolet light which reaches the Earth's surface.

Historically, mankind has endured atrocity, calamity, and ferocity. In terms of the environment, it too has endured. Environmental endurance is tested regularly at the benefits of society. What makes man man is his ability to survive and repair the damage he has done.

Al Gore defined man's relationship with the sky in posing the frightening question, " What will it do to our children's outlook on life if we have to teach <https://assignbuster.com/the-potential-effects-of-a-depleted-ozone-layer-essay/>

them to be afraid to look up? ” ( Lemonick, 1992, p. 40 ). If the ozone layer can be freed from the clutches of chemical villainy, only then can it be truly said once again ” let there be light ” and not worry about the consequences.

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