

Revive article of environmental pollutions of India and its effects in nature

Daya Shanker

Department of Physics

University of Lucknow, Lucknow

Abstract : There are many environmental pollutions which are produce due to plastic bags ,cemented road which do not absorb polluted water on road ,carbon mono oxide produced by car ,bus train etc. and shortage of green trees .Here the revive study have been taken from different sources to summarised the effect of nature .

IndexTerms - Effect of pollution, Health pollutions, Industrial pollutions.

I. INTRODUCTION

Environmental pollution is the **contamination** of the physical and biological components of the earth/atmosphere system to such an extent that normal **environmental processes** are adversely **affected**. That damage the environment” which can come in the form of chemical substances, or energy such as noise, heat or light **Pollutants** can be naturally occurring substances or energies, but are considered contaminants when **in excess of natural levels**. Pollution is the **addition** of any substance or form of energy (e.g., heat, sound, and radioactivity) **to the environment** at a rate **faster** than the environment can accommodate it by dispersion, breakdown, recycling, or storage in some harmless form .Pollution is a special case of habitat destruction; it is **chemical destruction** rather than the more obvious physical destruction. Pollution occurs in all habitats—land, sea, and freshwater—and in the atmosphere. .Much of what we have come to call pollution is in reality the no recoverable matter resources and waste heat. Any use of natural resources at a rate higher than nature's capacity to restore itself can result in pollution of air, water, and land. Pollution is habitat contamination.

Types of pollutions

There are many types of pollution

1. **Air pollution:** the release of chemicals and particulates into the atmosphere. Common gaseous pollutants include carbon monoxide, sulfur dioxide, chlorofluorocarbons and nitrogen oxides produced by industry and motor vehicles. Photochemical ozone and smog are created as nitrogen oxides and hydrocarbons react to sunlight. Particulate matter, or fine dust is characterized by their micrometre size.
2. **Light pollution:** includes light trespass, over-illumination and astronomical interference.
3. **Littering:** the criminal throwing of inappropriate man-made objects, unremoved, onto public and private properties.
4. **Noise pollution:** which encompasses roadway noise, aircraft noise, industrial noise as well as high-intensity sonar.
5. **Soil contamination** occurs when chemicals are released by spill or underground leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, MTBE, herbicides, pesticides and chlorinated hydrocarbons.
6. **Radioactive contamination**, resulting from 20th century activities in atomic physics, such as nuclear power generation and nuclear weapons research, manufacture and deployment. (See alpha emitters and actinides in the environment.)
7. **Thermal pollution**, is a temperature change in natural water bodies caused by human influence, such as use of water as coolant in a power plant.
8. **Visual pollution**, which can refer to the presence of overhead power lines, motorway billboards, scarred landforms (as from strip mining), open storage of trash, municipal solid waste or space debris.
9. **Water pollution**, by the discharge of wastewater from commercial and industrial waste (intentionally or through spills) into surface waters; discharges of untreated domestic sewage, and chemical contaminants, such as chlorine, from treated sewage; release of waste and contaminants into surface runoff flowing to surface waters (including urban runoff and agricultural runoff, which may contain chemical fertilizers and pesticides); waste disposal and leaching into groundwater; eutrophication and littering.

10. **Plastic pollution:** involves the accumulation of plastic products in the environment that adversely affects wildlife, wildlife habitat, or humans.

Effect on Human health

Polluted air can kill many organisms including humans. Ozone pollution can cause respiratory disease, cardiovascular disease, throat inflammation, chest pain, and congestion. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage in developing countries. An estimated 500 million Indians have no access to a proper toilet[1,2] Over ten million people in India fell ill with waterborne illnesses in 2013, and 1,535 people died, most of them children[3]. Nearly 500 million Chinese lack access to safe drinking water.[4] A 2010 analysis estimated that 1.2 million people died prematurely each year in China because of air pollution.[5] The WHO estimated in 2007 that air pollution causes half a million deaths per year in India.[6] Studies have estimated that the number of people killed annually in the United States could be over 50,000.[7]

Oil spills can cause skin irritations and rashes. Noise pollution induces hearing loss, high blood pressure, stress, and sleep disturbance. Mercury has been linked to developmental deficits in children and neurologic symptoms. Older people are majorly exposed to diseases induced by air pollution. Those with heart or lung disorders are at additional risk. Children and infants are also at serious risk. Lead and other heavy metals have been shown to cause neurological problems. Chemical and radioactive substances can cause cancer and as well as birth defects.

An October 2017 study by the Lancet Commission on Pollution and Health found that global pollution, specifically toxic air, water, soils and workplaces, kill nine million people annually, which is triple the number of deaths caused by AIDS, tuberculosis and malaria combined, and 15 times higher than deaths caused by wars and other forms of human violence.[8,9] The study concluded that "pollution is one of the great existential challenges of the Anthropocene era. Pollution endangers the stability of the Earth's support systems and threatens the continuing survival of human societies." [10,11],

Industrial Pollution

The paper industry is adopting non-chlorine chemicals e.g. hydrogen peroxide, peracids, oxygen, ozone etc. with the aim of reducing pollution. The peracids namely peracetic acid (PAA) pH=4, Caro's acid (CA) pH=5 with Active Oxygen 0.2% have been used as activating agents for lignin and as brightening agent. The peracids, namely peracetic acid/ CH₃COOOH (PAA) with molecular weight of 76.05 and active oxygen as 21% whereas, Caro's acid/(CA) which is peroxy monosulfuric acid (H₂SO₅) having molecular weight of 114.08 gm. and 14% active oxygen content were used as bleach media against corrosion of SS-2205, 317L and 316L. Effect of added Cl⁻ and corrosion inhibitor was also studied; the affected results were compared and analyzed in this study.

Peracids are considered as effective for bleaching as peroxide and ozone but they are preferred over the later two alternatives on account of their superiority with regard to associated safety hazards, ingredient costs and effluent loads. Peracids have not been adopted by Indian Paper Industry up to now but these are the futuristic bleach chemicals.

The work in this paper relates the corrosion effects on stainless steels in peracids bleach with and without chloride as well as with corrosion inhibitors. With the use of newer chemicals, their corrosive effect has been studied. There are very few studies related to corrosivity in per acids solutions, Pehkonen et al [12] studied corrosion of SS in ozone and PAA. Been [13] studied the effect of calcium as inhibitor and Varjonen et al [14] studied MgSO₄ as inhibitor on titanium.

Some recent studies by Singh et al [15,16,17] has appeared on corrosivity of peracids bleach media. A study on SS has been done by Singh R & Singh A. K. on SS using chelants but in peroxide media [18]. Another study has been done in same bleach media on cold rolled steel by Qing Quad, Jun Zhou et al [19-21]. In present study corrosion investigations were performed in peracids to test austenitic stainless steels 316L, 317L and a duplex stainless steel 2205.

References

1. waterhealthconnection.org Overview of Waterborne Disease Trends Archived 2008-09-05 at the [Wayback Machine](http://www.waybackmachine.org). By Patricia L. Meinhardt, MD, MPH, MA, Author. Retrieved on April 16, 2009
2. [Pennsylvania State University](http://www.psu.edu) > Potential Health Effects of Pesticides. by Eric S. Lorenz. 2007.
3. *"Indian Pediatrics"*. Retrieved May 1, 2008.
4. *"UNICEF ROSA - Young child survival and development - Water and Sanitation"*. Retrieved 11 November 2011.
5. Isalkar, Umesh (29 July 2014). *"Over 1,500 lives lost to diarrhoea in 2013, delay in treatment blamed"*. *The Times of India*. *Indiatimes*. Retrieved 29 July 2014.
6. *"As China Roars, Pollution Reaches Deadly Extremes"*. The New York Times. August 26, 2007.
7. Wong, Edward (1 April 2013). *"Air Pollution Linked to 1.2 Million Deaths in China"*. *Nytimes.com*. Retrieved 1 December 2017.
8. *Chinese Air Pollution Deadliest in World, Report Says*. National Geographic News. July 9, 2007.
9. David, Michael, and Caroline. *"Air Pollution – Effects"*. *Library.thinkquest.org*. Retrieved 2010-08-26.
10. Stanglin, Doug (October 20, 2017). *"Global pollution is the world's biggest killer and a threat to survival of mankind, study finds"*. *USA Today*. Retrieved October 20, 2017.
11. *"SIS.nlm.nih.gov"*. *SIS.nlm.nih.gov*. 2010-08-12. Retrieved 2010-08-26.

12. Pehkonen, A., Salo, T., Aromaa, J., and Forsen, O., Pulp Paper Can.101 (4): T104 (2000).
13. ASTM G1-10, Vol.03.02, 1991, "Preparing, cleaning and evaluating corrosion test Specimens".
14. Singh, A.K. and Singh, G., Anti-Corrosion Methods & Materials 49(6): 417(2002).
15. G. Singh and A. K. Singh, "Performance of steels against corrosion in peracid bleach media", TAPPI J.84 (2): 42(2001).
16. A. Sharma and A.K. Singh, "Corrosion study of steels in peracidbleach solutions" Appita Vol. 60, No 4, P 333 JULY, 2007
17. Tuthill A.H., SCI 1983 4th International Symposium on Corrosion in the Pulp & Paper Industry Proceedings, SCI PRESS, Stockholm, Sweden, p. 133.
18. Singh R. and Singh A. K., "Corrosion studies of stainless steels in peroxide bleach media. Tappi.J. Dec. 1995.Vol. 78 No. 12 P. -111
19. Preparing, "Cleaning and Evaluating Corrosion test Specimens", ASTMStandards G1-90 Vol. 03, P. 35, (1991).
20. L. Li, A.A. Sagues, "Effect of Chloride Concentration on the Pitting and Repassivation Potentials of Reinforcing Steel in Alkaline Solutions." CORROSION '99, NACEInternational, (1999).
21. Qing Qu, Shuan Jiang, Lei Li , Wei Bai , Jun Zhou, " Corrosion behavior of cold rolled steel in peracetic acid solutions" Science Direct, Corrosion Science Vol-50, p. 35-40, (2008).

