CLIMATE ENGINEERING – A MYTH OR A PANACEA?

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INTRODUCTION

Climate change refers to "change in climate" over the last 100 years which is caused predominantly by human activities. It represents change in long term weather patterns. The earth's climate is not static and has changed many times in the past. It is a natural process but over the years this process has been aggravated due to anthropogenic factors such as burning of fossil fuels and deforestation. Global warming refers to gradual increase in the overall temperature of the earth's atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other greenhouse gases.

According to Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, evidence of climate change is now overwhelming which will affect all countries and changes will be severe, pervasive and irreversible. This claim has been corroborated by the increase in frequency and intensity of extreme weather events all across the world. The impact of climate change has resulted in the melting of glaciers, rising sea levels, submergence of low lying lands, extinction of species, floods, droughts, coral bleaching, ocean acidification, changing rainfall patterns etc.

ACT NOW OR PAY DEARLY LATER

The United Nations Conference on Human Environment popularly known as the Stockholm Conference (1972) laid the foundation of environmental action at the international level, following which, in 1992 the Earth Summit was held in Rio De Janeiro, Brazil. The Intergovernmental Panel on Climate Change (IPCC) was formed in 1988 to assess the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change. The aims of the IPCC are to assess scientific information relevant to human-induced climate change, the impacts of human-induced climate change and options for adaptation and mitigation.

Mitigation means to make such changes that would reduce the carbon emissions or to increase carbon sinks. It includes measures such as using renewable sources of energy, increasing forest cover, developing hybrid and electric vehicles, use of LED lights, recycling

of waste etc. Adaptation means to be prepared in advance for facing the effects of climate change in order to minimize damage and to convert threats into opportunities. It includes measures such as climate smart agriculture techniques, early warning systems with quick response teams, migration corridors for animals to migrate to suitable climate areas etc.

Though adaptation and mitigation techniques are sine qua non for combating climate change and most countries have pledged to cut their carbon emissions in the Paris Summit in 2015 but currently the results from these measures have been a mixed bag which has forced scientists and academicians to devise new techniques to combat climate change one such technique under consideration is Climate Engineering.

CLIMATE ENGINEERING

Climate engineering, also known as geo-engineering, describes a diverse and largely hypothetical array of technologies and techniques for intentionally manipulating the global climate, in order to moderate or forestall effects of climate change. In recent years discussions of climate engineering have grown considerably amongst scientists, policy-makers, and civic environmental groups engaged in addressing climate change These technologies may target different areas of the climate system; possess varying mechanics, costs, and feasibilities; have diverse environmental and societal impacts on varying scales; and create their own sets of risks, challenges, and unknowns. Climate engineering is an umbrella term for two types of measures: carbon dioxide removal and solar radiation management.

- Carbon Dioxide Removal (CDR) methods attempt to absorb and store carbon from the atmosphere; either by technological means, or by enhancing the ability of natural systems. It includes the following techniques:
    1. Ocean iron fertilization- Phytoplankton , which dwell near the surface prefer iron and during photosynthesis they absorb carbon dioxide from atmosphere. When they die after about 60 days, the carbon which has been consumed by it falls to the bottom of the ocean. Thus, scientists believe by pumping iron in ocean it would stimulate growth of phytoplankton and this in turn would reduce carbon dioxide present in atmosphere.
    2. Carbon dioxide capture from fossil fuel plus storage (CCS) - Also known as Carbon sequestration can be defined as the capture and secure storage of carbon that would

otherwise be emitted to, or remain, in the atmosphere. The focus is the removal of CO_2 directly from industrial or utility plants and subsequently storing it in secure reservoirs. The rationale for carbon capture and storage is to enable the use of fossil fuels while reducing the emissions of CO_2 into the atmosphere, and thereby mitigating global climate change. The CCS chain consists of three parts; capturing the carbon dioxide, transporting the carbon dioxide, and securely storing the carbon dioxide emissions, underground in depleted oil and gas fields or deep saline aquifer formations.

3. Carbon dioxide capture from air plus storage- Klaus Lackner, director of the Lenfest Centre for Sustainable Energy at Columbia University, has designed an artificial tree that passively soaks up carbon dioxide from the air using "leaves" that are 1,000 times more efficient than true leaves that use photosynthesis. Also termed as artificial trees, it can be compared to furnace filter, capable of pulling particles out of the air.

- Solar Radiation Management or Sunlight Reflection Methods (SRM) aims to reduce the amount of heat trapped by greenhouse gases by reflecting sunlight back into space, either by increasing the reflectivity of the earth's surfaces, or by deploying a layer of reflective particles in the atmosphere. It includes the following techniques:

1. Reflective aerosols - It involves creating sulfur or metallic aerosol clouds in the upper atmosphere. The idea of stratospheric aerosol distribution is to achieve a "volcano effect" in which solar radiation is blocked by clouds of sulfur (sulfur dioxide is most commonly proposed), dispersed by aircraft.
2. Cloud seeding – Some climate engineers have theorized that increasing the abundance of clouds would also increase the Earth's albedo (brightness) and deflect some solar radiation back into space. This approach uses cloud seeding techniques (salt-based chemical aerosols) to thicken clouds by increasing the amount of cloud condensation nuclei for moisture to bond with.
3. Space mirrors – In order to deflect enough sunrays to bring the earth's temperature back to its pre industrial level, geo-engineers plan to launch mirrors in space and position them between sun and earth so that more amount of sunrays are reflected back.

Though prima facie the technologies appear to be a panacea that would bring our planet in the pre-industrial phase but there are a number of serious concerns which needs to be addressed

before these technologies are deployed to combat climate change. Some of the concerns are listed below –

- The technology treats only the symptoms and does not address the root cause i.e how to reduce the emission of greenhouse gases it is only concerned with capturing the emissions and not reducing it. Thus what it offers is only a short-term solution.
- Till now there have been no scientific studies on what impact it would have on the earth as a whole and the ecosystem.
- With such technologies in place people might turn a blind eye to their respective duties and would adopt a lacklustre approach and would be dependent on technology to resolve the issue of climate change.
- It is expensive and would require a lot of expertise. Capturing greenhouse gases and storing them under the earth, placing mirrors in space are complex technologies and questions such as how much carbon could be stored under the ground still remain unanswered.
- No cost benefit analysis has been conducted so far. It is still an open question as to whether the risks of climate engineering outweigh the risks of climate change, or how climate engineering might be integrated with existing climate policies.
- One of the strongest fears is that developing climate engineering technologies may siphon resources and momentum away from already flagging efforts to reduce carbon emissions, and that this would further disrupt tenuous negotiations at the UNFCCC.
- In the 2013 Fifth Assessment Report (AR5), the IPCC concluded that "Modelling indicates that SRM methods, if realizable, have the potential to substantially offset a global temperature rise, but they would also modify the global water cycle, and would not reduce ocean acidification."
- Mr. Keith, a global leader in investigating this topic, says that geo-engineering, or engineering the climate on a global scale, is an imperfect science. It cannot offset the risks that come from increased carbon dioxide in the atmosphere. If we do not halt man-made CO2 emissions, no amount of climate engineering can eliminate the problems - massive emissions reductions are still necessary.

CONCLUSION

For now, the field of climate engineering consists of desk and laboratory studies and small-scale field research on some CDR and SRM methods. No technologies have been deployed at a scale that impacts the global climate. Yet, the intent behind climate engineering, its geographically large or even global impact, and the complexity and uncertainty of its potential effects upon climate governance, human society – raise profound questions. Although research, engagement efforts, and media coverage are growing, they are still largely limited to a handful of countries. The global community must develop an understanding of the social, environmental, cultural, political and ethical issues involved in a wide and heterogeneous array of climate engineering technologies, in order to efficiently determine whether any of them are appropriate and available in our efforts to address climate change. Climate engineering could be a third option alongside adaptation and mitigation to tackle the menace of climate change. It can supplement but not substitute adaptation and mitigation efforts. While any research in the field of combating climate change is welcome but should not be put to use unless its effectiveness is backed by scientific data and understanding its impact on the earth in toto. Thus climate engineering is *neither a myth nor a panacea but one of techniques which could be used in future in our fight against climate change*.

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APPLICATION OF JUDICIAL ACTIVISM IN PROTECTING THE ENVIRONMENT: AN ANALYSIS

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I. ABSTRACT

This article talks about and dissects the Judicial Activism and its application in ensuring environment, and steps taken by judiciary to accelerate this goal. The main objective behind this research is to distinguish the contemporary picture and study the nature and degree of till date developments in different environmental statuses through judicial system. It additionally analyzes the role of judiciary, recent advancement and change of environment assurance. It further perspectives upon the constitutional aspects and the new patterns in judicial methodology in environmental protection. The proposed study will prompt a more enlightening and exhaustive comprehension of environment law and the approach alongside the part of Supreme in today's context to the new emerging threat which should be combat adequately.

Keywords: Judicial Activism, environment, role of judiciary, recent development, sustainable development, precautionary principles, and polluter pays.

II. INTRODUCTION

Legislative and administrative reactions to environmental issues have been received in India-particularly in the Bhopal tragedy which is plainly the world's worst industrial disaster.[1] But the legal ways to deal with the environmental issues which have additionally followed, have been particularly fascinating in India for an assortment of reasons, which are pertinent to the difficulties confronting courts today, in developing and developed countries alike.

In India, the legal procedure has tended to compel respondent improvement venture powers to expand environment related spending (e.g., on environmental effect evaluation, pollution abatement etc.) in appreciation of the development project up to more practical levels than the power concerned would somehow embraced. It proposes that the Judiciary can assume

[1] *Union Carbide Corporation v Union of India* AIR 1992 SC 248

critical steady parts, once in a while imperative synergist and initiative parts in the definition and requirement of environmental policies and laws. But it can never assert an imposing business model or selectiveness in appreciation thereof.

This essay will seek to undertake a critical evaluation of judicial activism in the development and enforcement of environmental law in India.

III. DISCUSSION

1. DEVELOPING THE JURIDICAL BASES FOR ENVIRONMENTAL LAW IN INDIA

Environmental law in India has its modest sources in ideas of 'nuisance' under tort law and 'public nuisance' under criminal law. From such humble beginnings in India, environmental claims, damages and wrongs have continued to a judicially settled in the idea of rights and of human rights. In *Gobind Singh v. Shanti Sarup*[2], a baker who amplified his chimney towards a public road was discovered blameworthy of disturbance under both common and criminal law. The court requested the chimney not be relit before it was devastated, and requested demolishment of the chimney.

The criminal law idea of public nuisance has been seized upon by the courts to act against environmental contamination. Subsequently, the courts have held that public health imperilled by public nuisance is a public nuisance violative of Section 133 of the Indian Penal Code. Public nuisance can't be imperilled by private business.[3] Similarly, the private business is finishing social objectives also (e.g., producing glucose saline), if the outcome is contamination in a neighbourhood it will be controlled by the court.[4]

Courts in India have conjured their forces under Section 133 of the IPC to impose criminal liability for 'public nuisance' upon both private and public sector organizations that have been liable of environmental debasement.[5] Thus, the courts avoided attesting such criminal purview and permitted a car repair and painting workshop to proceed with its air contaminating exercises.[6] The courts also refrained where tea wastes were being discharged

[2] AIR 1979 SC 143.
[3] *Smt. Ajeet Mehta v State of Rajasthan*, 1990, CRI.LJ. 1596.
[4] *Krishna Gopal v State of MP*, 1986, CRI.LJ. 396.
[5] *Indian Council for Enviro Legal Action v. Union of India* (1996) 3 SCC 212.
[6] *Madhavi v Thilakan*, 1989, CRI.L.J. 499

into the river[7] also, chemical, air and water contamination asserted to have prompted the demise of animals and children was permitted to continue.[8]

The Supreme Court has expanded the meaning of 'life', 'liberty', 'livelihood', 'health' and 'education' to include environmental questions.[9] The right to a 'wholesome environment' has been read into the Right to Life under Article 21.[10]

The Indian courts have supplemented civil and criminal jurisdiction on grounds of nuisance and public nuisance respectively in two critical ways:

(i) Environmental prosecution can be based upon wide 'human rights' cases (as got from the fundamental rights part of the Indian Constitution).

(ii) Environmental case can be construct upon dependence in light of restricted lawfulness bases and also 'abuse of power', 'excess of power' or jurisdictional contentions too.

2. ***FROM LOCUS STANDI TO PROMINENT ACCESS: ANOTHER TRIUMPH FOR INDIAN JUDICIAL ACTIVISM ON THE ENVIRONMENT***

Those influenced by environmental pollution or harm have dependably had two principle methods of access to the Courts: civil and criminal. As appeared over, the Courts have practiced their jurisdiction and normally allowed help, when approached. Subsequently, numerous offended parties with real grumblings about environmental pollution can't profit themselves of common cures. Correspondingly, criminal protestations likewise require much from the complainant who needs to keep catching up on the objection to get a torpid police and prosecutor to move. Criminal cases as well, are inclined to experience a few rounds of appeals. Indian courts, perceiving these issues, have reacted in two primary ways. first, they have articulated through judicial decision a restricted right to legitimate guide and noticeable judges like Justice Krishna Iyer and Justice P. N. Bhagwati have driven a campaign outside the Courts (in administrative Advisory groups on Legal Aid) to put set up now far reaching national and state-wide legal aid schemes.[11]

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[7] *Tata Tea Ltd v State of Kerala*, K.L.T. 645.
[8] *Ryland's v. Fletcher* (1868) LR 3 HL 330.
[9] *Attakoya Thangal v Union of India*, 1990 (t), KLT 580.
[10] *Subhah kumar v State of Bihar*, AIR 1991 SC 420.
[11] Ibid.

Another real commitment of the courts has been to considerably adjust the conventional tenet of remaining by allowing poor people and abused to be spoken to by volunteers-concerned nationals, NGO's and other expert gatherings who themselves may not be straightforwardly influenced by the grumbled activity. This rule of 'representative standing' has secured the arrival of fortified work and enhanced the conditions for those ladies who are living in a defensive home.[12]

Social action litigation in admiration of infringement of fundamental rights turned out to be imperative to environment law cases subsequent to, the courts have received a methodology of basing (wherever conceivable)environmental claims upon fundamental rights. Social action litigation brought an assortment of environment issues before the courts: deforestation and contamination by mining, industrialisation and its effluents, environmental aspects of dams and other vast scale development ventures, gas leaks, issues regarding hazardous substances, pollution of rivers, overuse of ground-water, air pollution by vehicles, urban planning, and protection of parks and sanctuaries.[13]

3. ***JUDICIAL ACTIVISM: FILLING NORMATIVE AND ENFORCEMENT GAPS IN ENVIRONMENTAL LAW***

The surge of cases related to environment before the courts through social action litigation have given the courts a chance to mediate from numerous points of view:

(i) They can recognize procedural gaps and flaws in the execution/requirement systems by judicial decision help fill those crevices and remedy such imperfections.

(ii) They can fill regulating gaps in existing enactment through the procedure of judicial law-making.

(iii) They can correct abuses of power or authority through executing offices through the writ of prohibition.

(iv) They can allow directives to secure the status quo.

(v) They can arrange prompt, break alleviation or other suitable solutions for the casualties of environmental pollution or debasement.

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[12] Government of India, Ministry of Law, Justice & Company Affairs, *Report on National Juridicare; Equal Justice-Social Justice*, 6I (1977).

[13] R. Dhavan & R. Pant, *Environmental Compromises and the Law-Indian Institutions*, Legal Support & Research Centre, New Delhi.

Below, we look at the record of the courts on various diverse environment issues.

3.1 Water Pollution

When the Water (Prevention and Control of Pollution) Act was established in 1974, polluters started to contend that the specific provisions of the Act uprooted the general power under Section 133 of the IPC. The courts decided that 'the Water Act was particularly instituted to avoid water contamination; subsequently it must be developed generously'.[14]

The courts have mediated in cases where release of untreated effluents by tanneries into the Ganges River was bringing about a grave water contamination issue,[15] where the discharge of untreated waste and sewage by municipal authorities into the river was similarly jeopardising health[16] and where a distillery and chemical company was discharging effluents into the water.[17]

The Supreme Court while perceiving that 'the right to a wholesome environment' as a component of the right to life, declined to intercede when the vast organization included Tata Iron and Steel Organization was releasing slurry and sludge into the Bokaro waterway and blamed the applicant for recording a PIL to subserve private interests.'[18] It appears that the Supreme Court, when confronted similarly with an industrial giant, did not consider it fit to attempt such adjusting of concerns.

3.2 Air Pollution

The Air Pollution Act deals with industrial pollution, vehicular pollution and with the control of noxious emissions.[19] In a landmark case[20] resulting because of the leak of Oleum gas from a chlorine creating plant in the city of Delhi characterized three noteworthy commitments.

Directions: Rather of just administering on the case, the Court chose to hold purview over the Corporation (Shriram) and issued a progression of bearings, requiring Shriram to deposit noteworthy wholes of cash, both to guarantee consistence and to fund the Courts'

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[14] Section 58, Water (Prevention and Control of Pollution) Act, 1974.
[15] *MC Mehta v Union of India*, AIR 1988 SC 1037.
[16] *MC Mehta v Union of India*, AIR 1988 SC 1115
[17] *Narmada Bachao Andolan v Union of India & ors*, (2000) 10 SCC 664
[18] *Subhash kumar v State of Bihar*, AIR 1991, SC 420.
[19] *Charan Lal Sahu v Union Of India* AIR 1990 SC 1480
[20] *MC Mehta v Union of India*, AIR 1987 SC 982

activity of apparently official and legislative functions 'during the time spent showing evidence in the case'.

Deep-Pockets Theory: The Supreme Court decided that damages must serve as an obstruction. It consequently articulated the hypothesis that the quantum of damages to be granted by the Court are to be comparable with the tort-feasers' capacity to pay.

Absolute Liability: The Court, here, set up another standard of Absolute Liability (embracing a 'no deficiency' approach) for damages coming about because of the demonstrations of an enterprise included in 'ultra hazardous movement for benefit'. It denies any barriers at all (even those which have allowed under a 'strict liability)' standard, for example, defence of Act of God.[21]

3.3 Mining

The courts have been careful in surveying the environmental outcomes resulting from mining exercises. They have decided that no person has a personal stake in reestablishment of a mining rent merely that the proprietor has put vigorously in the mining operation.[22] If the renewal raised environmental considerations, specific authorization would be required from the Central government for every lease renewal.[23] More recently, the courts, once again on the premise of the report of its own Committee of specialists, requested stoppage of mining operations of a particular classification of limestone mines where damage to vegetation and environment was resulting from their operations.[24]

Subsequently, the court has no alternative however to close the mines following the Executive, accused of the obligation of doing as such was in desolation of its obligation; 'Accused of the appointment of actualizing the laws of lands, the official is yet neglecting to do its obligation by law and by the people.[25] The courts' part in appreciation of mining cases has been to secure the right of citizens to live in a safe and healthy environment, to guarantee that the official releases its obligations in executing the laws, and to strike down act of inborn or express illicitness.

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[21] *Rylands v Fletcher* (1868) LR 3HL 330.
[22] *Kinkri Devi And Another v State Of Himachal Pradesh And Others,* AIR 1988 HP 4.
[23] *B. V Joshi v State of Andhra Pradesh & Others,* AIR 1989 AP 122. 53.
[24] *General Public of Saproon Valley & Others etc. v State of Himachal Pradesh*, AIR 1993 HP 52.
[25] *Tarun Bharat Sangh Alwar v Union of India and Others*, JT 1993 (3) S.C. I.

Thus, the judgement uncovers a judiciary in disorder- a Judiciary altogether different from the one that improved so strikingly and inventively from the mid-seventies to the mid-eighties to ensure and advance the human rights of poor people and mistreated and to secure environment.

IV. RECOMMENDATIONS

The judiciary is reacting to the worldwide call for protection of environment. With the reception of new arrangements of laws and rules and the lawful administration the way things are today sounds more dynamic and delicate. The accompanying suggestions may increase the value of keep the environment free from pollution through judicial activism:

1. Besides the general court procedure, alternative dispute settlement mechanism ought to be started for better security of environment.

2. Mindfulness and specialized education system identifying with the environment law and its insurance can be taken to improve its solid base.

3. A solid and extensive administrative system ought to be made in ensuring the environment.

4. The non-governmental association is required to take part more in the approach making and making the legislators mindful of the escape clauses in the environment; and an environmental law reform body ought to be made for analyzing the environmental laws.

5. Open awareness and successful public cooperation ought to be guaranteed through various government and non-government association.

6. A check and balance system ought to be presented between the judiciary and the environmental activists.

V. CONCLUSION

No evaluation of the judiciary in India can be attempted without tending to the 'potentially disastrous secret' of the Indian Supreme Court-the choices identifying with the Bhopal tragedy. In that judgement[26] the Court made the following rulings:

[26] *Union Carbide Corporation etc. v Union of India,* AIR 1992, SC 248.

1. The powers of the Supreme Court are not depleted by Article 139A of the Constitution which is not proposed to whittle down powers under Articles 136 and 142 of the Constitution. The Court accordingly attested for itself full powers to do equity under the Constitution.
2. In an agent suit, for example, this one, a trade off went into without notification to every single intrigued party is not void.
3. The quashing of criminal arraignments was legitimate. Statutory procurement despite what might be expected the Supreme Court has the ability to quash criminal procedures.
4. The Bhopal Gas Disaster (Processing of Claims) Act, 1985 does not conceive or compel reasonableness hearings before going into a settlement which will tie even those who have not agreed to thereto and no decency hearing is essential.
5. The Indian Constitution'' requires that 'natural justice' be taken after. Oversight of a 'opportunity to be heard' when in doubt violates any decision.

Rather one needs to not get sidetracked by debate about what came about because of unreasonable judicial activism. Yet rather one needs to attempt to comprehend, from institutional perspectives, what turned out badly with an Indian judiciary that had guaranteed so much and why. Mainstream view of what had happened in the Bhopal case has seriously dissolved the validity and adequacy of the judiciary in India for the future.

'An effective utilization of law won't save the environment. But, joined with social action, it may help stem the tide and give a more demanding order than the present one, (of charge and control regulation) which is displayed for need of social will to authorize it'.

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Law and the festival of lights and smoke.

Introduction

One of the largest and brightest festivals celebrated in India, Diwali is regarded as the festival of lights and prosperity. Observed on a new moon night either in the months of October or November, the celebration of this festival usually illuminates the entire nation and heralds the shift from darkness to light. In the past few decades, bursting firecrackers during this festival has become something of an annual practice. In spite of the surging anti-cracker campaign, unfortunately, there has been no substantial drop in its usage and popularity. Over the past few years, the number of cases reporting health ailments have rapidly risen just a few days' post Diwali celebrations. Alarmed, the authorities initiated several awareness campaigns but to no avail. This year, Diwali was widely celebrated in the last week of October and evinced disastrous results on the environment. It witnessed a sharp rise in both sound and air pollution alike. Subsequently, this has attracted the attention of the citizens and the government. Diwali, this year, was met with a pollution explosion as toxic smoke enveloped the nation, with Delhi being one of the worst affected areas. The High Court had even described the city as a 'gas chamber.' The pollution levels in the Capital city exceeded the safe limit by 42 times. The nation at large faced the brunt of the celebrations that formed a vicious cloud of smoke, comprising toxic matter and hazardous pollutants as well as exposing the citizens to a range of breathing and medical ailments.

The Environmental aspect:

Clean and safe air is unequivocally regarded as an essential component of health and well-being. But, as long as there is pollution, there continues to exist a substantial threat to health. With Diwali around the corner, pollution inevitably peaks due to the harmful combination of toxic gas and noxious pollutants. The crackers not only contain deadly constituents but also contravene the sound barrier of 80 db. In bustling areas, the safe limit is easily exceeded by a thousand times during Diwali and contributes in making the air unbreathable and noise unbearable.[1] The burning of firecrackers threatens and reduces the quality of air and results in a steep rise in the level of sulphur dioxide which overshoots the limits provided by the World Health Organisation (WHO)[2] by at least 200 times. Its disastrous impacts are not felt only by humans, but animals and birds as well.

Among all crackers, the Chinese firecrackers are used rampantly in the country. They not only offer a greater profit margin to the sellers but attract consumers as well as they burn brighter and last far longer. However, they are exceptionally unstable and have a very powerful oxidising ability. These expensive crackers contain explosive and dangerous levels of potassium chlorate due to which the Centre issued a

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[1] Kanishka Singh, 'Post-Diwali pollution spike underlines the need for a hard line on crackers,' *The Indian Express* (1 November, 2016)

[2] 'WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide' http://apps.who.int/iris/bitstream/10665/69477/1/WHO_SDE_PHE_OEH_06.02_eng.pdf accessed 2 November, 2016

notice that informed the sellers, importers and general public of the dire consequences involved in the use of foreign crackers. The level of pollution created by such fireworks is much higher.[3] On the other hand, fireworks manufactured in India use inert and safer chemicals. Crackers produce not just air but noise pollution too and aid the process of global warming. It deteriorates the environmental and ambient air quality and generates solid waste. The primary ingredient of firecrackers is gunpowder, which generates solid reaction products. Further, it seeps into the soil, crops and water which only adds to the grave concern of pollution. It is an established fact that air pollution resulting from fireworks can under no circumstances whatsoever, be neglected.

Legislative Provisions:

Earlier this year, the government promised to adopt a hard line on crackers and enact stringent measures for the same. Nonetheless, this Diwali too saw the use of Chinese firecrackers. There is no distinct Act to regulate the manufacture, possession, use and sale of crackers. The Noise generated by them are governed by the Environmental Protection Act, 1986 and The Noise Pollution (Regulation and Control) Rules, 2000. Firecrackers are predominantly governed by the Explosives Act, 1884. This statute, along with Explosives Rules of 2008, regulates the display and storage of fireworks. The 2008 Rules too, prescribe guidelines specifying the maximum permissible noise limit of a firecracker and the materials used in its manufacture. The government specified noise limits for fireworks under the Environment Protection Act of 1986 in 1999. Additionally, chemical content of crackers and the use of chemicals are also laid down.[4]

There exists no legislation which regulates the type of chemicals that are used in manufacturing the crackers. The principal concern is that the officials have failed to adopt a hard stance while managing an issue that attaches religious sentiments to it. In order to protect their environments, developed nations, such as America, Australia, Canada, United Kingdom and Japan have implemented legislations that tighten regulations pertaining to crackers. Heavy penalties are accorded to any violations and the approval of competent authorities must be obtained before open burning of any and every material.

Meanwhile, in India, there is neither any regulation that imposes restrictions on the nature and number of crackers that can be burst nor has any method of burning crackers been prescribed. According to the "Environment Protection Act, 1986 and the Environment Protection Rule, 1986 and 1999 (amendment) rules"; Rule 89 specifies that "The manufacture, sale or use of firecrackers generating noise level exceeding 125

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3 'What Delhi Government's ban on Chinese Firecrackers means for the environment,' (*The Better India* 29 October, 2016) http://www.thebetterindia.com/73456/ban-chinese-firecrackers-enforced-delhi-govt/ accessed 3 November, 2016

[4]Aneesha Mathur, 'On fireworks, detailed rules on paper, several court orders,' *The Indian Express* (18 April, 2016)

dB(AI) or 145 dB(C)pk at 4 meters' distance from the point of bursting shall be prohibited." Additionally, the Explosives Rules 2008 (Rule 14) mandates that "every manufacturer shall on the box of each firecrackers shall mention details of its chemical content, sound level and that it satisfies requirements laid down by the chief controller." In order to curb the trading of imported firecrackers, the Department of Industrial Policy & Promotion, Ministry of Commerce & Industry has banned the making and selling of crackers consisting of sulphur or sulphurate with any chlorate.[5] The enforcement of the laws in place has been ineffective and has been unable to prevent the creation of an unhealthy environment. The environment has clearly been given a backseat. No legislation considers the damaging impact that crackers have on our environment and it has been absolutely neglected from the arena of policy making. If a total ban on crackers cannot be imposed, there must necessarily be stringent laws to regulate and restrict the burning of crackers.[6] It is imperative to prohibit the inflow of unsafe materials that damage the environment. Simultaneously, regulations that limit and lower the levels of sound and air pollution must come into force. Each year, environmental activists campaign for a total ban on crackers and urge citizens to refrain from burning them. In spite of taking this issue to the Supreme Court, it didn't yield a decision in their favour. The apex court stated that an umbrella ban would "hurt religious sentiments and hurt celebrations". In order to effectively tackle the matter, the issue must be taken up the root level.

Case Laws:

The impact of crackers on the environment is a matter of grave concern. The rulings of the apex court discussed below sought to reduce the alarming rise in pollution sound and noise levels.

In the case of **"Prevention of Envn. & Sound Pollution *v.* Union of India",**[7] the court held that "Diwali is primarily associated with Pooja and is considered as a festival of lights, not of noises and that shelter in the name of religion cannot be sought for, for bursting firecrackers". It further ruled that the "excessive use of firecrackers has assumed the nature of a public hazard and is a violation of one's fundamental rights to a clean and healthy environment as enshrined in the Constitution of India". The plea to relax restrictions on the burning of crackers during Diwali was declined and the court reasoned that "if relaxation is allowed to one community, there will be no justification for not permitting relaxation to others and if we do, so the relaxation will become the rule."

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[5]Notification GSR No.64 (E) dated 27.1.1992

[6] Rajnit Singh, 'Legal Control of Noise Pollution: A critical Evaluation' (*SCC Online Blog*, 27 July,2016) http://blog.scconline.com/post/2016/07/27/legal-control-of-noise-pollution-a-critical-evaluation/ accessed 4 November, 2016

[7] SC/1717/2005

The landmark case specified a set of regulations dealing with crackers and noise pollution. Its key pronouncements were that it imposed a blanket ban on bursting noisy crackers from 10pm to 6am and mandated the sellers to include details of the components of the crackers on the boxes and ensure that it satisfied the guidelines prescribed by the Department of Explosives. Likewise, in 2001, the Court prescribed a set of guidelines regarding the noise levels of firecrackers.

Arjun Gopal & others V Union of India: In a first of its kind petition in judicial history, three infants moved to the apex court, seeking steps to reduce pollution and guarantee their right to clean air enshrined under Article 21 of the Constitution. Their petition to seek measures against the increasing levels of combined pollution was dismissed. It sought to place a total ban on burning crackers during Diwali and alternatively, to specify areas for lighting crackers. It recognised that breathing clean air is swept under the purview of our Right to Life. The court asserted that such a blanket ban would be met with petulance and instead, directed the authorities to educate the public about the disastrous impacts of bursting crackers.

Conclusion:

Diwali must essentially be celebrated as a festival of lights, not noise. The intolerable noise typically generated during Diwali causes irreparable damage to health as well as the environment and must be put to an end. To prevent sound pollution, an effective enforcement mechanism is a must. Such a measure must prevent anyone from violating it, even during exceptional circumstances. The extant regulations, rules and legislative provisions dealing with fireworks and the law has been unable to enforce and ensure safe noise limits. Paucity of sound measuring mechanisms, its exorbitant rates, high cost involved in getting samples checked and unduly delays by the testing laboratories are some of the obstacles faced when implementing the noise standards. The Department of Explosives has opined that the noise created by fireworks can be effectively regulated by prescribing the crucial measures which determine the noise such as size, shape, amount and constitution of chemicals in the crackers.[8] The Department must engage in research work to determine the chemical equation of every cracker.

The problem must be addressed at the root level. Further, it is pertinent to initiate awareness programmes regarding the detrimental impacts of crackers and the resulting noise pollution. Educational facilities must be targeted and the citizens must be empowered and educated for they themselves benefit by reducing air and sound pollution. Although laws have been adopted, they are inadequate and there lies an imminent need to implement legislations that limit and mitigate pollution created by fireworks. With regard to specific legislations covering firecrackers and regulations, India lags far behind in comparison to other countries.

[8] *Forum, Prevention of Envn. & Sound Pollution v Union of India* [2005]

What is imperative is the enactment of a single, separate and specific law that regulates sound and air pollution and prescribes methods to restrain it.

The use of fireworks is a health hazard that causes both noise and air pollution. Bursting firecrackers contravenes the fundamental right to life covered under the Constitution of India. Suitable measures must be adopted to ensure that ‘Diwali is a festival of light, rather than a cacophony of unruly and intolerable noise.’

Clinical Education in India for Public Interest litigation in Environmental Laws.

Environmental Law Clinics in India are rarely heard of. The National Law School of India University runs an Environmental Law Clinic which is focused on bolstering of Environmental Laws in India with technological advancements and also equipping the students with the knowledge of national and global trends in Environmental Law. It also works on various policy issues in India.

Public Interest Litigation in India for Environmental issues and rights of the people has been a fashion in India. Mr. M.C. Mehta is considered to be a pioneer of PIL for Environmental Issues in India. For his contribution to the Environmental legal development and Public interest litigation, Mr. M.C. Mehta is globally recognized and has won several awards. Indian legal landscape is a place for renowned and budding lawyers. The trend of legal education is now focused on business and corporate laws. There is no specific education contributing to the development of interest and knowledge of students in Environmental Laws and Public Interest Litigation. The trends are more focused on commercialized legal arenas, which have better economic returns.

By writing this article, I am strongly supporting the idea of Clinical education which is more focused on Public Interest Litigation. India can either follow the American model of Environmental Law Clinical education or can develop a better model of ~~it's~~its own. I find the American Model of Clinical education for the development of –Environmental Laws, Public Interest Litigation and a group of future leaders in the field of law and clinical education.

Environmental Law Clinics [ELC] will enhance the quality of legal education

Environmental Law Clinics based on the model of American Environmental Clinics will enhance the quality of legal education in India. Most law school students in India undertake internships in their semester breaks with law firms, advocates or any other organization of their interest. A clinical education model incorporated with the curriculum of legal education in India will not only enhance the quality of education and practical knowledge that a law student receives, but also creates an interest of the law students into public interest litigation. This is providing internships to law students at home, i.e. the law school and training the students.

ELC will provide access to environmental justice.

ELC will be capable of connecting with the general public and raise Environmental and energy issues directly impacting them. Tthe low-income communities, the unaware communities and the communities which do not have an access to the justice system of India will have an equal access to the environmental justice system. The local problems are core to the Environmental and Climate Change issues in India and the issues go unheard due to lack of resources, unawareness and environmental awareness. These communities are also disproportionately impacted by the Climate Change and Environmental Issues.

ELCs will create a broad range of employment in the nation.

The Clinics based on the American model will not only enhance the legal education, but it will also create a broad sector of employment for various groups of people, including legal and non-legal. This is a quality employment for people who want to work for the society and help for the development of policies for health, education and environment in India. A focused group of environmental leaders from the law school are trained and focused on the development and education in the field of environmental law.

There are Challenges to the Model of Environmental Law Clinics in India.

Though the idea sounds perfect and idealistic for the strengthening of environmental laws and policies and Public Interest Litigation in India, there are some challenges that will have to be overcome for smooth functioning of the clinics in India. This is a change in the traditional teaching and training of law students in India. Such a change would require change of old curriculum and methods of teaching to create global lawyers.

Also funding for a clinic that works for Public Interest Litigation will be difficult. If the law school or the University can maintain and fund the clinic, then the smooth and efficient functioning of the clinics can be ensured.

It is a recommendation to retain the clinical education system particularly for Environmental Law and Public Interest Litigation in India. After the conclusion of Paris Agreement, there is a need to create a robust network to ensure that India meets its INDC. One way to achieve the

INDC is to educate using innovative and clinical education for environmental and energy laws and policies in India.

Impact of Industrial Activities on Environment and Human Rights Vis-a-Vis Environmental Sustainability

-Rinky Dixit

Abstract

"Poverty eradication without empowerment is unsustainable. Social integration without minority rights is unimaginable. Gender equality without women's rights is illusory. Full employment without workers' rights may be no more than a promise of sweatshops, exploitation and slavery. The logic of human rights in development is inescapable."

-Mary Robinson, United Nations High Commissioner for Human Rights

Today, industrialization has passed a serious challenge. The free trade policy and information technology have immensely set down the economic activities which is continually gravely affecting the environmental system of the nation and the human rights of an individual. Industrial hazards are a threat to the life support system(s) of the people. The right to live in a clean, safe and healthy environment are majorly hampered because the effects of environmental destruction can be seen leading on the health of individuals and communities. But for the economic prosperity of the country, industrial growth is equally necessary and cannot be ignore, therefore there is a need to address the three pillars of sustainable development simultaneously i.e. the ecology, economy and society. The issues of human rights and environmental sustainability cannot be left behind for sustainable development because human rights are essential and basic that is to achieve the well being of humans and the environmental sustainability needs to be lasting for the benefit of future generations.

This paper primarily focuses on the impact of industrial activities on the environment and human rights. Additionally, it has been analyzed by this paper that the industrial pollution is the major cause of environmental damage, and it is also the principal factor for violating a basic human right, i.e., the right to live in a healthy environment. Through this research paper, we would be dealing with the human rights issues and challenges that need to be highlighted with the respect to industries exploiting environment which is often ignored.

Keywords: Human Rights, Environmental Sustainability, Industrial Activities, Sustainable Development, Economy, People, Health

Introduction

In olden times, the whole existence of man was dependent on the blessings of nature. Therefore, to balance the behaviour of the people with that of nature, they identified the trees, rivers, seas and air with supernatural spirituality. Likewise, the cutting of trees, and the contamination of water was viewed very seriously and punishments for infliction of any harm upon them were prescribed.[1]

In *Sachindanand Panda v. State of West Bengal*[2], Justice Chinappa Reddy stated that: "Every part of the earth is sacred. We are part of the earth and it is part of us. The perfumed flowers are our sisters; the horse, the great eagle, these are our brothers. The rocky crusts, the juices in the meadows, the body heat of the pony and man- all belong to the same family".

The above quotation reflects a praiseworthy consciousness towards the environment, and the inner gratitude and the rights of those people, towards the contribution of nature in the development of mankind.

Over the past decades the world economy has increased tremendously. In the era of open global market economy, hazardous industries are playing a decisive role in the economic development and in the advancement of the economy, but they are simultaneously causing a great risk to human life and to the environment. Industries in the process of making goods necessarily interact with the natural resources and environmental systems. Therefore, they are found to be over utilizing the natural resources and environmental services, because of which gradually the environment is degrading, and it is leading to human misery.

The environment is in crises all over the world. The developing countries like India suffer from the acute problem of environmental pollution. Every citizen has the right to live in an environment worthy of human existence. The degradation of the environment and depletion of valuable natural resources not only impede economic development but even threaten human survival. Therefore industrial enterprises are increasingly getting regulated both from the environmental, as well as from the business point of view.[3]

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[1]Indrajit Dube, *Environmental Jurisprudence: Polluter's Liability*, p. no. 1 (LexisNexis Butterworths, New Delhi, India, 2007)

[2] (1987) 2 SCC 295

[3]Dr. V. Rajyalakshmi and Dr. S. Sumitra, *Environmental Law: Master in Business Laws – Part* 1, p. no. 98 (Distance Education Department National Law University, Nagarbhavi, Bangalore, 2013)

Industrial Activities and Environment Vis-a-Vis Human Rights

Man made economic systems have grown out of the unlimited exploitation of all three vital services of nature. Firstly, the natural capital required for economic activity is provided through natural resources (both renewable and non-renewable) of the environment. Secondly, nature has immense capacity to assimilate residuary of artificial processes carried out by humans in their economic endeavours (what is known as sink service). Thirdly, nature provides the life supporting base of human beings without which no economic pursuits have any meaning or purpose to serve. Imbalance of economic development is due to the unlimited exploitation of the three vital services of the environment. Because of the economic ventures that cause over exploitation of the resources, and the overuse of nature's absorbing capacity, excess levels of pollution have been created, which has had an adverse impact on the very life support base provided by nature for all living beings.

Industrial Activities and Environmental Concern

Economics and the environment are linked clearly through the material balance principle. The relation between economics and environment is something which is very fundamental and basic. The inseparable relation between them is evident from the three principle services provided by the environment. To begin with, the primary thrust of the industrial revolution was to change emphasis in advanced economics from agriculture and commerce, to manufacture and technology. This transition which is usually said to have originated in England in the Eighteenth century spread rapidly around the globe by the early part of the Nineteenth century. Industries as the principal factors of environmental degradation occupy centre stage in many environmental debates.

According to Section 2(j) of the Industrial Disputes Act, 1947, 'industry' means any systematic activity carried on by co-operation between an employer and his workmen (whether such workmen are employed by such employer directly or by or through any agency, including a contractor) for the production, supply or distribution of goods or services with a view to satisfy human wants or wishes (not being wants or wishes which are merely spiritual or religious in nature).[4]

[4]Information Technology Act 2000, India, *available at*: http://pblabour.gov.in/pdf/acts_rules/inustrial_disputes_act_1947.pdf (Last Modified on April 2nd, 2016)

Industrial activities mean activities that take place at industrial facilities. Activities such as manufacturing, material handling and storage, processing, transportation and consumption not only deplete the natural resources, but also causes environmental pollution when exposed to the weather.[5]

The term 'environment' refers to all elements of the physical and biological world (including humans), as well as the interactions between them. These elements may be categorized as ecosystem: goods, meaning the actual natural resources themselves (flora, fauna, soil mineral, air, water), and services, including the harvestable products (crops, timber), processes essential to sustain the provision of these resources (nutrient cycles, climate patterns, flooding control) and aesthetic and cultural benefits of ecosystems (recreation).[6]

The term 'pollution' is derived from the verb 'pollute' which means to foul. It is contamination of the natural environment with an adverse impact upon the biosphere.

Environmental Protection Act, 1986, defines 'pollution' as the presence in the environment of any environmental pollutant.[7] Pollutant is defined as: 'any solid, liquid or gaseous substance present in such concentration as may be tend to be injurious to environment'.[8]

Type of Industrial Pollution

The very emergence of the environmental law has its genesis in the problems created by the economic development *vis-a-vis* nature. Not surprisingly, the cities in industrialized countries began to feel the horrendous effects of pollution. The on-going industrial revolution led to an enormous increase in the per capita consumption of energy and also increased level of consumption in the industrial countries accompanied by new, unknown and unforeseen types of environmental pollution. They include:

- **Air Pollution:** The second main source of air pollution is the emissions from industrial and commercial process. Almost all the industrial units and power

[5]Information Technology Act 2000, India, *available at*: http://envfor.nic.in/divisions/hsmd/hsim89.html (Last Modified on April 2nd, 2016)
[6]Information Technology Act 2000, India, *available at*: http://www.grida.no/publications/et/ep1/page/2509.aspx (Last Modified on April 4th, 2016).
[7] S2(k)
[8] S2(b)

generating stations use combustion of coal, coke, petroleum for generation of heat and power.

- **Water Pollution:** Industrial effluents are one of the major sources of water pollution. Industrial effluents contain any liquid, solid or gaseous substance which is discharge from any premises used for carrying on any kind of industrial operation process, or treatment or disposal system.[9]
- **Noise Pollution:** One of the inescapable consequences of industrial developments is noise. Industries are major source of noise pollution affecting the public in proximate distance.
- **Soil Pollution:** Large quantity of solid wastes like unused and rejected chemicals generated during manufacturing processes (rejected or broken items of metal, plastic, wooden or chemical solids, powders) are dumped over on the surface of soil by almost all industries with difference in the degree.[10]
- **Solid Waste Pollution:** Pollution starts off with the problem of waste disposal. When there is no proper means of waste disposal, then most of the waste is just strewn around. Solid wastes carry extreme risks to the health of human beings and the rest of the environment.

Industrial Activities and Human Rights

Industries are playing an important role in the economic development but simultaneously they are also violating the basic rights of human and causing risk to the environment. Developing countries like India suffer from the acute problem of environmental pollution. All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood. The right to a healthy environment is also recognized as 'third generation' human rights in recent years. Human beings are at the centre of all concerns for sustainable development. They are entitled to a healthy and productive life in harmony and nature.

The Universal Declaration of Human Rights states that every individual and organ of society has the responsibility to strive to promote respect for these rights and freedoms and by progressive measures, national and international, to secure their

[9] S. Shanthakumar, *Introduction to Environmental Law*, LexisNexis, Gurgaon, Haryana, India, 2nd Edn. 2014
[10]Information Technology Act 2000, India, *available at*: http://www.tutorvista.com/content/biology/biology-iv/environmental-pollution/solid wastes.php (Last Modified on April 6th, 2016).

universal and effective recognition and observance. As important organs of society, businesses have a responsibility to promote worldwide respect for human rights.[11]

Human Rights are those basic standards without which people cannot live in dignity. To violate someone's human rights is to treat that person as though she or he were not a human being. To advocate human rights is to demand that the human dignity of all people be respected.[12] 'Life, livelihoods, culture and society, are fundamental aspects of human existence- hence their maintenance and enhancement is a fundamental human right'.[13]

Causal Mechanism of Industrial Activities *Vis-a-Vis* Human Rights Issues and Challenges

Extracting and burning coal, oil, and gas can contribute to serious health hazards and even death.[14]

The industrial hazards and disaster causes are malfunctions, failures, or unanticipated side-effects of technological systems, whereas many other factors are also involved.[15] Industrial accidents can occur at any stage in the production process, including extraction, processing, manufacture, transportation, storage, use and disposal. This usually occurs in the form of explosions, fires, spills, leaks, or wastes. There are a series of disasters from chemical industries,[16] construction industries,[17] defence industry,[18] energy industry,[19] food industries,[20] mining industries[21] etc, because the disposal methods of these industries are still very primitive, with land filling being the

[11]Information Technology Act 2000, India, *available at*: http://www.legalserviceindia.com/article/l464-Human-Rights,-Environment-&-Industrial-Disaster-.html (Last Modified on April 7th, 2016).
[12]Information Technology Act 2000, India, *available at*: https://www1.umn.edu/humanrts/edumat/hreduseries/hereandnow/Part-1/whatare.htm (Last Modified on April 7th, 2016).
[13]Information Technology Act 2000, India, *available at*: http://nhrc.nic.in/Documents/Publications/Environment.pdf (Last Modified on April 9th, 2016).
[14]Information Technology Act 2000, India, *available at*: https://www.nrdc.org/issues/protecting-communities (Last Modified on April 6th, 2016).
[15]Information Technology Act 2000, India, *available at*: https://www.unu.edu/unupress/unupbooks/uu211e03.htm#the nature of industrial disaster (Last Modified on April 10th, 2016).
[16] E.g.: Bhopal Disaster of 1984
[17] E.g.: collapse of cooling tower for a power plant under construction in willow Island in West Virginia in 1978, killed 51 workers.
[18] Where Million Explosions in Port Chicago killed 320 people in August, 1965
[19] Torre Canyon oil disaster in 1967
[20] E.g.: Burst of molasses tank in Bostan Killed 21
[21] Dhanbad coalmines disaster in Jharkhand, Indigo in 1965 killing over 300 miners

major practice. Generally, industries neutralize the toxic waste-water from the plants with lime and the neutralized liquid effluents, which are highly toxic, and discharge into rivers and ponds with little or no treatment. The sludge and other solid and semi-solid wastes are disposed off on fallow public land. Thermal power plants have emerged as one of the major pollutants in urban India. The coal used in thermal power plants is rarely good quality and subsequently emissions of suspended particulate matter, sulphur dioxide and fly-ash in the atmosphere are very high.

The impact of industries is now increasingly projected as avenues of environmental destruction leading to violating of human rights. Industrialisation poses dangers to the health and safety of people. Many people die a slow and steady death because of the growing pollution of the general environment and the increasing hazards in the occupational environment. Industrialisation is creating a high-risk environment for everyone, though it is ultimately the poor who face the highest risks and dangers. They get the dirtiest, most hazardous of jobs and poverty forces them to live in an unhealthy environment. India faces a disastrous 'double burden' of disease- filthy conditions and simultaneously developing secondary health hazards, such as, those of mosquito-borne diseases. The range of direct and indirect health hazards from these chemical effluents is as wide as the chemical components themselves and the consequences may make their presence felt immediately or may even have a more residual effect. The hazards may vary from simple skin disorders to more complex and fatal illnesses such as cancer and organs damage/dysfunction.[22]

There have been several industrial accidents, like the chemical disaster at the Union Carbide pesticide factory at Bhopal in 1984, a chlorine gas leak at Jamshedpur in 2008, a fire at an ONGC platform at Bombay High in 2005, a toluene fire at a Ranbaxy Laboratories factory in Mohali in 2003 and a chlorine gas leak in Vadodara in 2002 that affected 250 people.[23] These industrial accidents have adversely affected the environment and the human rights of the people.

The Legal Framework

[22]Information Technology Act 2000, India, *available at:* http://nhrc.nic.in/Documents/Publications/Environment.pdf (Last Modified on April 9th, 2016)
[23]Information Technology Act 2000, India, *available at:* http://www.livemint.com/Politics/NtYcWmazGAis6CEpj4yAkP/Industrial-disasters-Is-India-better-prepared-than-it-was-i.html (Last Modified on April 11th, 2016).

The fundamental right framework enshrined in the Indian constitution, particularly in Article 21, is amply utilized and expanded by the Indian Judiciary to accord fundamental right status to the claim of environmental protection. Thus, in *Subhash Kumar v. State of Bihar*[24] the court held that the right to life includes the right to enjoy unpolluted air and water. In a majority of pollution cases, the expanded version of Article 21 which guarantees right to life and liberty of every person has been invoked for rendering protection to the individuals from adverse compact of pollution. Similarly, whenever the need for elimination of pollution sources raised the issues of livelihood, freedom of trade, etc., Article 21 is utilized to strike a balance between the economical and environmental perspectives of pollution activities. Articles 32 and 226 gave wide latitude to the higher judiciary to provide constitutional remedies with regards to pollution related claims.

The jurisprudence arising from certain remarkable judicial pronouncements in recent years, more specially relating to Article 21 of the Constitution, deal with 'the right to life'. Some examples:

In *Francis Coralie Mullin v. Union Territory*[25], the Supreme Court held that "The right to life includes the right to live with human dignity and all that goes along with it, namely the bare necessaries of life such as adequate nutrition, clothing and shelter…."

In *M. C. Mehta v. Union of India*[26], the Supreme Court has held that life, public health and ecology have priority over unemployment and loss of revenue.

In *M. C. Mehta v. Union of India & Ors.*,[27] (the Oleum Gas Leak case), the Supreme Court established a new concept of managerial liability – 'absolute and non-delegable' – for disasters arising from the storage of or use of hazardous materials from their factories. The enterprise must ensure that no harm results to anyone irrespective of the fact that it was negligent or not.

In *Vellore Citizens Welfare Forum v. Union of India*,[28] the Supreme Court held that industries are vital for the country's development, but having regard to pollution caused by them, principle of 'Sustainable Development' has to be adopted as the

[24]AIR 1991 SC 420
[25]1981 2 SCR 516
[26]1987 SCC 131
[27]1987 SCR (I) 819
[28]AIR 1996 SC 2715

balancing concept. 'Precautionary Principle' and 'Polluter Pays Principle' has been accepted as a part of the law of the country.

In *Indian Council of Enviro-Legal Action v. Union of India*,[29] (the Bichhri pollution case), following the decision in the Oleum Gas leak case and based on the polluter pays principle, the polluting industries were directed to compensate for the harm caused by them to the villagers in the affected areas, specially to the soil and to the underground water.

The Following Legislation and Rules Related to Industrial Activities and Environment *Vis-a-Vis* Human Rights in India

The concern for preserving quality of life and promoting the environment while undertaking the task of development was stressed for the first time in the fourth year plan.[30]

The Factories Act, 1948, amended in 1976 and 1987: Section 7(A) of the Act imposes general duties on the occupier of any premises which constitutes as a factory to ensure as reasonably practicable, the health, safety and welfare of all workers while they at work in the factory and to maintenance of all places of work in the factory in a condition that safe and without risk.

The Public Liability Insurance Act, 1991, amended in 1992: Under this Act, every owner of an industry shall take out, before he starts handling any hazardous substance, insurance policy to cover his liability. The Act intends to provide mechanism that would enable an immediate financial relief to the victims. It is based on the principle of no-fault based liability.

The National Environment Tribunal Act, 1995: In 1995, the National Environment Tribunal Act which adopts strict liability approach was established to provide quick relief and compensation in case of damage to persons, property and environment due to accidents occurring while handling a hazardous substance.

The Manufacture, Storage and Import of Hazardous Chemical (MSIHC) rules, 1989 as amended in 1994: The rule 13 requires the occupier to prepare and keep up to

[29]1996 3 SCC 212
[30] Armin Rosencranz, Environmental Law and Policy in India

date on-site emergency plan for dealing with possible major accidents. The provision applies to hazardous chemical installations, which include both industrial processes, and isolated storages, handling hazardous chemicals in quantities laid down in then rules and indicated as Threshold Planning Quantities (TPQ). Rule 14 requires the district emergency authority or the District Collector in the state to prepare an off-site emergency plan for the district, incorporating details made available by the hazardous installations and transport authorities. A separate transport plan needs to be drawn up as a sub-plan under the district off-site emergency plan.

The Mines and Minerals (Regulation and Development) Act of 1957 amended in 1986: The Section 4(A) permits the Government to terminate a prospecting licence and mining lease in order to preserve the natural environment, prevent pollution or harm to public health, monument, buildings, etc.

The Human Rights Approach to Sustainable Development

In 1987, the Bruntland Commission published its report titled: 'Our Common Future', in an effort to link the issues of economic development and environmental stability.[31] The Brundtland Commission's briefly defined 'sustainable development' as the 'ability to make development sustainable- to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs'. On development, the report states that human needs are basic and essential; that economic growth- but also equity to share resources with the poor- is required to sustain them; and that equity is encouraged by effective citizen participation.[32] It will be interesting to note that some of the approaches to sustainable development are innovative as well as appealing, like sustainable development, now the emphasis is on moving towards 'sustainable society', 'sustainable human well-being', 'sustainable communities', 'green communities' and 'green development'.[33] Respect for and enforcement of human rights is a precondition for sustainable development. This implies that without acknowledging and acting to defend the rights of people,

[31]Information Technology Act 2000, India, *available at:* https://sustainabledevelopment.un.org/content/documents/5839GSDR%202015_SD_concept_definiton_rev.pdf (Last Modified on April 11th, 2016)
[32] Information Technology Act 2000, India, *available at:* http://www.hks.harvard.edu/sustsci/ists/docs/whatisSD_env_kates_0504.pdf (Last Modified on April 13th, 2016)
[33] Information Technology Act 2000, India, *available at:* http://shodhganga.inflibnet.ac.in/bitstream/10603/46343/7/07_chapter%202.pdf (Last Modified on April 14th, 2016)

sustainable development is not possible. It is people who are at the centre of sustainable development: 'human beings who are entitled to certain basic living conditions'. By effectively linking human rights and sustainable development, the increasing state of uncertainty for the environment that surrounds and nurtures us is given a human face, directly impacting the well-being of all.[34] 'It makes perfect sense to link human rights to sustainable development: the right to life cannot be realized without basic rights to safe water, air and land. A human rights approach allows the quality of life of all people to be a central part of decision-making'.

Conclusion and Suggestions

Over the past decades the world economy has increased tremendously. Industrialization has both negative and positive impact. The advances in communication and information technology have enormously stimulated the economic activities; equally the industrial disasters raise many economic, environmental, social and legal issues. Today degradation of the environment and human rights has become a burning problem. The anxiety for the preservation of environment, and health and safety of an individual was evinced in several national and international conferences and conventions. But legislative response to environmental problem has been inadequate in India. Necessity to address environmental problem led India to formulate environment specific policies, guidelines and make improvement upon them further. The pitfall in the administration of environmental policies and laws needs a revisit of Indian legal regime relating to various authorities. Judicial contribution deserves specific appreciation for their contribution to environment jurisprudence.

- Organized activities and operations should facilitate the adoption and integration of cleaner and safer technologies in the sector to reduce the health and safety impacts to employees arising from recycling and waste management processes.
- Ensure to secure clean, safe drinking water for all citizens. Especially to low-income communities and people who bear a disproportionate burden of polluted water.

[34] P.S. Jaswal and Nishtha Jaswal, *Environmental Law: Environment Protection, Sustainable Development and the Law,* Allahabad Law Agency, U.P., India 3rd Edn., 2009

- Policymakers should improve aging infrastructure and protect drinking-water sources from mining, drilling, and industrial development.
- Industries or businesses should support and respect the protection of internationally proclaimed human rights and make sure that they are not complicit in human rights abuses. It is the duty of enterprises to protect the life and health of workers and of all persons living within the range of an industrial plant.
- There is a need for development, which is sustainable, participatory and concerned with equity.
- It should be the duty of state governments, public bodies and agencies to be accountable for the life, health and well-being of its citizens and to control industrial activities within their territory.
- Businesses should support a precautionary approach to environmental challenges, undertake initiatives to promote greater environmental responsibility and encourage the development and diffusion of environmentally friendly technologies.