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Smog in Our Brains

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The shield surrounds us is called environment. Environment is a sum total of physical, chemical and biological forces and their interrelationship with human beings and other living organisms. When some pollutants added to our surrounding and disturb their concentration results in polluted environment which cause some mental illness to humans .Some forms of pollution like air, water and noise pollution. When some undesirable things added to air and disturbs it normal concentration is called air pollution. Air pollution from automobile smoke has adverse effects on mental health like anxiety, autism, damage to human brain and behaviour, effect on intelligence and emotional stability. On the other hand when some undesirable materials or products added to water bodies contaminates water hence cause water pollution .This polluted water used by humans for their daily activities results in psychiatric effects on human health. These effects are mood changes, schizophrenia, poor memory and insomnia. Another form of pollution is noise which is termed as” unwanted sound “when it exceeds prescribed limits. This noise pollution is called “modern plague “because it spreads everywhere. Noise pollution interferes with task performance, modifies social behaviour and causes annoyance. Noise also effected cognitive abilities, hypertension and other mental disorders. The toxic metals present in the environment also have some psychological effects which includes attention deficit, abberant behavior, irritability, memory loss and lowered IQ.The extent of effects of polluted environment on mental health is largely unanswered. But if we take up some steps then we will surely save our environment from being polluted. These steps involved some practices and pollution control devices like recycling, reusing and mitigating techniques, sedimentation, physical and biological filtration, bag houses, wet and dry scrubbers. Other techniques are labelling noise emitting products and noise mapping at national level to find out hot spots of noise pollution. Current wideness does seems to suggest that environmental pollution is related to mental health, health symptoms & possibly raised anxiety & consumption of sedtive medication but there is little evidences that has more serious effects. Ideally further studies investigating the association between polluted environment & mental illness should be carried out longitudinally. Breadth of psychiatric outcome studies should be large to include well being, hostility, depression, anxiety & phobias while also measuring relevant aspect of personality such as neuroticism & negative affectivity which may influence reporting of symptoms. An assessment of perceived threat from polluted environment should be taken into account & different ways of coping with prolonged exposure need to be examined. This paper highlights the impact of polluted environment on mental health of an individual and how different forms of pollution cause damage in brains and causes mental illness.

Introduction

The term “environment” is derived from french word “environner” which means” to

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surround". According to Environment protection Act 1986 environment includes all the physical and biological surrounding of an organism & their interaction. Pollution is a negative undesirable change in the physical, chemical, biological characteristics of our air, land & water caused by excessive accumulation of pollutants. One of the greatest problem that the world is facing today is that of environmental pollution, increasing with every passing year and causing grave & irreparable damage to human being & earth. Mental health refers to the ability to adjust satisfactorily to the various strains of the environment. Mental health is the full & harmonious functioning of the whole personality(Hadfield).The polluted environment has adverse effects on mental health. Various forms of pollution causes mental illness to some extent.

Polluted Environment and Mental Illness

When any pollutant added in the environment it makes it polluted and this polluted environment gave rise to many mental health problems like

- Depression
- Anxiety
- Mood changes
- Aggressive behaviour
- Hypertension
- Poor cognitive function
- Attention deficit
- Psychosis
- Neurosis
- Memory loss
- Irritability.

Air Pollution & Mental Illness

Air pollution is by far the most harmful form of pollution. Introduction of harmful materials into atmosphere causing diseases damage to living organisms, natural & built environment. Dirty air has bad effects on our brains as well. Air pollution come from anthropogenic or natural sources. Pollutants namely CFCs, CO, Nitrogen oxide, Sulphur oxide, toxic metals, PAN & radioactive pollutants cause ill effects to mental health Black carbon & fine particulate matter cause cognitive change. Polycyclic aromatic hydrocarbon cause Anxiety & depression. Behavioural & mental disorders, depression & some neurological conditions such as Autism & Schizophrenia may be linked to exposure to air pollution. A new study at university of Rochester Medical Centre found that subjecting mice to air pollution causes unhealthy changes in the brain including enlarging the same areas found in human diagnosed with autism & schizophrenia, learning disability, impulsivity & memory loss. New public health studies & laboratory experiments implicate traffic fumes in lowering mental capacity, intelligence & emotional instability as well as damage human brains & behaviour. Breathing in street level fumes for just 30mins. can intensify electrical activity in brain region responsible for behaviour, personality & decision making, change DNA in elderly & heighten risk for Alzheimer's disease & speed effect of Parkinson's disease. Over past decade researcher have found that high level of air pollution may damage children's cognitive

abilities, increase adults risk of cognitive decline and possibly even contribute to depression

Water Pollution & Mental Illness

Water pollution is the contamination of water bodies (lakes, ocean, aquifers, rivers & ground water) This form of environmental degradation occur when pollutants are directly or indirectly discharge into water bodies without adequate treatment to remove harmful compounds. An estimated 580 people in India dies or falling ill everyday becoz of polluted water. PCE readily crosses the blood brain barriers and high affinity for lipophilic tissues in the central nervous system. The exact mechanism for its neuro toxic effects remains unclear but include peroxidation of cell membrane lipids,alterations in fatty acids profile of brain and loss of myelin and interaction with neuronal receptors. Prenatal & early childhood exposure to the organic solvent (PCE)may raise the risk of certain psychiatric illness particularly bipolar disorders, post traumatic stress disorder (PTSD) or schizophrenia later in life. The population based retrospective birth cohort study showed that children who were exposed to drinking water contaminated with PCE which was used to link municipal water pipes had almost two fold increased risk for bipolar disorders compared with general population. Expose to PCE has shown to cause mood changes, anxiety & depression. Heavy metals in water lead to wide array of problems ranging from neuro psychiatric disturbance such as aggressive behaviour, memory loss, depression, learning defects & hypertension. Chronic Lead (Pb) cause poor memory, inability to concentrate, attention deficit, Insomnia lowered IQ, difficulty with reading, writing language, visual and motor skills. Mercury in water causes insomnia, anxiety, depression, poor cognitive function & emotional instability, hallucinations and criminal behaviour.

Noise Pollution & Mental Illness

Noise pollution may be defined as environmental noise that causes physiological & psychological damage if the volume is high or exposure is prolonged. Noise is also defined as unwanted sound. The hair cells in the ear are damaged to an extent that cannot be repaired or replaced. The intensity or loudness of sound is felt in the form of pressure waves and affects our eardrum. According to Environment Protection rules 1999-audible range from 20-20,000Hz.Noise above 80db is regarded as noise pollution. Noise pollution is a threat to health and well being. It is more severe & wide spread than ever before & it will continue to increase because of population growth, urbanisation and transportation. The health effect of noise pollution are numerous, persistent & medically significant. Noise pollution interfere with sleep, concentration & communication. In the 21 century we are experiencing the man made environmental noise from which there is no escape, no matter where we are in our homes, cars, streets, parks & other public places. A recent search (September 2006)of National library of Medicine database for adverse health effect of noise revealed over 500 citation. Noise pollution is not believed to be cause of mental illness but it is assumed to accerlate & intensify the development of latent mental disorders. Noise pollution may cause or contribute to adverse effects like anxiety, stress, emotional instability, change in mood, neurosis & psychosis. Children, the elderly & those underlying depression may be particularly vulnerable to these effects because they may lack adequate coping mechanism. Noise level upto 80db are associated with both an increase in

aggressive behaviour & decrease in helpful behaviour. Recall of content & incidental detail are adversely effected by noise.Noise also effect hypothalamus pituitary adrenal hormone to increase level of stress related hormone cortisol. Excessive noise can lead to emotional problems such as fatigue, anxiety & aggression. The other negative reaction associated with noise pollution include anger, disappointment, dissatisfaction, depression, anxiety or exhaustion.

Suggestions

It is necessary to control environment from being polluted. Pollution control is a term used to control emissions and effluents into air, water and other resources. With the help of some practices and pollution control devices, we can save our environment from pollution & ultimately avoid mental illness. Some suggestions are given below:

Practices

- Recycling
- Reusing
- Waste minimization
- Mitigating
- Preventing

Pollution Control Devices

1. Electrostatic precipitators
2. Baghouses
 - Scrubbers
 - 1) Baffle scrubber
 - 2) Wet scrubber
 - 3) Dry scrubber
 - 4) Cyclonic scrubber
 - 5) Mechanical aided spray
 - Industrial waste water management
 - Sewage treatment
 - Direct regulation of noise emission
 - Labelling products with their noise emission
 - Comprehensive noise mapping at national level.
 - Hair analysis, clinical signs and symptoms.

By using these methods we can minimizing the ill effects of pollution on environment and indirectly save human brains from being polluted.

Conclusion

Many researches show that environmental pollution has some psychiatric effects on human beings but the extent of the damage remain unclear. Current wideness does seems to suggest that environmental pollution is related to mental health, health symptoms possibly raised anxiety & consumption of sedative medication but there is little evidences that has more serious effects.

Ideally further studies investigating the association between polluted environment & mental illness should be carried out longitudinally. Breadth of psychiatric outcome studies should be large to include well being, hostility, depression, anxiety & phobias while also measuring relevant aspect of personality such as neuroticism & negative affectivity which may influence reporting of symptoms. An Current wideness does seems to suggest that environmental pollution is related to mental health, health symptoms & possibly raised anxiety & consumption of sedative medication but there is little evidences that has more serious effects. Ideally further studies investigating the association between polluted environment & mental illness should be carried out longitudinally. Breadth of psychiatric outcome studies should be large to include well being, hostility, depression, anxiety & phobias while also measuring relevant aspect of personality such as neuroticism & negative affectivity which may influence reporting of symptoms. An assessment of perceived threat from polluted environment should be taken into account & different ways of coping with prolonged exposure need to be examined of perceived threat from polluted environment should be taken into account & different ways of coping with prolonged exposure need to be examined.

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