

# Punjab: An Environmental toxicity hotspot heading towards death?

## Punjab's Ecosystem is full of Poisons!

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It is increasingly becoming obvious that Punjab is turning into a hotspot of Environmental Toxicity. We have more than two hundred dangerous chemicals in our environment including our own bodies. Chemical Toxicity is the known story but recently added Radioactive Toxicity is relatively less talked about. This is quite obvious now that agricultural and industrial policies of the governments in Post Independence India have turned Punjab into hub of chemical toxicity. Highly toxic chemicals have been added into the soil, water, air and food chain of Punjab for the last many decades under the name of development. However the radio active toxicity is only one to two decades old. Toxicity of Genetically Modified Crops (Bt. Toxin) has also been added recently and has the potential of causing disaster in itself.

For the last few decades dangerously toxic agricultural inputs-Pesticides and Fertilizers are being used blindly, mindlessly and without any scientific evidence of their actual need. The Multinational Corporations which are the producers and their Governments have succeeded in making them indispensable for agriculture in Punjab. Most of these chemicals are persistent in nature (not easily biodegradable). They go on accumulating in the environment with the passage of time. Their levels go on increasing in the air, water, soil, food chain and bodies of animals and human beings. Unfortunately these toxic inputs are being used in spite of the fact that many of them are banned in Europe and America. As their levels increase beyond certain levels the health of all living beings is adversely affected. This stage has already reached in Punjab.

In Punjab we are being affected by mixed toxicity. The studies are few in number. We know what the level of research in our society is. We also know the level of the political will of our Governments to find out the root causes of ill health. We also know that how our government machinery is hand in glove with the criminals who are the cause of these root causes. In spite of all these severe handicaps we (those interested in the welfare of people) are able to gather certain observations/studies which are enough to reach certain minimum conclusions. Whatever information is available is enough to raise the questions. The observations/studies up to now are enough to say with confidence that Punjabis are a Toxicity Affected Community and our environment is full of dangerous toxins. The Toxins which are present in the environment of Punjab are much in excess of the safe limits:-

1. **Fluorides:** Fluoride levels of many regions in Punjab are high. This has been a known fact since half a century. It is most unfortunate that the Governments have never even tried to do the region wise mapping of Fluoride levels in the ground water. It is even more unfortunate that even after half a century of knowing the high levels in Malwa, no Government has ever made a serious effort to provide Fluoride Free Drinking water to the people of that region.

Excessive Fluoride in water is not only natural in origin it is also added through the industrial waste water of some of the industries. Excessive Fluoride in the water is highly toxic. Earlier it was thought to damage bones and teeth. Brown and Brittle Teeth of Malwa Belt are a very familiar sign and identity of the people of this region. Joint and Bone Problems including the Spine Deformities are known even to the common man of High Fluoride Regions of Punjab. Lately the Scientific Understanding of High Fluoride Levels in drinking water has dramatically changed. Now it is well known that it is toxic not only for bones and teeth but all the systems of our body. Now it is being said that High Fluoride Levels in Drinking Water can ruin the whole body physiology. It should also be noted that Fluorides are not only natural but are very high the effluents from certain industries.

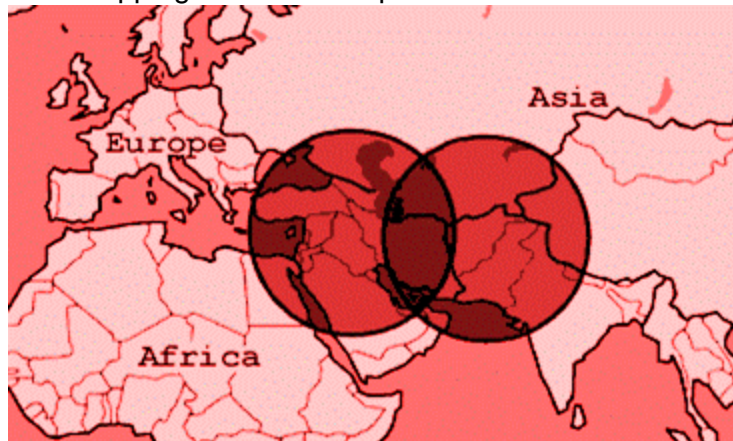
- 2. Agricultural Toxins:** Highly toxic Agricultural Toxins are being used much in excess of the safe limits without any scientific rationale. We, in Punjab with 2% of country's land are using 18% of these chemicals. Most of these chemicals are manufactured by foreign MNCs and their trade is done just like karyana items without any rule or regulation. Many of these chemicals are banned in the western countries but are being used openly in our country on a large scale. Their use has increased tremendously over the last four decades. No Government has ever tried to assess the damage being caused to human health and the ecosystem. No Government has ever tried to assess whether they are really indispensable. No Government has ever tried to find an effective and safe alternative to these chemicals. Our Agricultural Scientists have never worked to make our own model (non chemical) a success. They have blindly accepted a borrowed model from the people who had no sense of agriculture and very superficial understanding of nature. People are being poisoned en masse and whole eco system is dying under the severe toxicity created by these highly persistent poisons.

According to the Environmental Protection Agency (EPA), 60% of herbicides, 90 % of fungicides and 30% of insecticides are known to be carcinogenic. Alarmingly, pesticide residues have been detected in 50% - 95% of U.S. foods. Large number of studies point out that Cancer, Parkinson's disease, miscarriage, nerve damage, birth defects, blocking the absorption of food nutrients etc. are because of these toxins. Even a worse picture exists in Punjab.

- 3. Industrial Toxins:** For the last 3-4 decades the industry in Punjab is throwing its untreated toxic waste water into water streams. Earlier Buddha Nalah was notorious for this because of the Ludhiana based industry but now this picture is true about all the drains/rivers of Punjab. This highly toxic water is being used for irrigation because alternative source of clean water is not available. That is the way our foods are being grown in highly toxic water. The wheat and rice being supplied to whole of the country are irrigated by toxic water from the industries and chemical fertilizers and pesticides are being used on whole sale basis. You can well imagine the plight of those people who are eating the wheat and rice from Punjab. The toxic water; which is flowing in our streams and rivers, for the last so many years has poisoned our ground water grossly. This water has grossly polluted the upper aquifers up to 200 feet. It has happened many times that the industry was caught throwing its toxic water directly into the ground water by making a bore well. See the level of crime! No industrialist has ever been jailed for crime of poisoning natural resource water in spite of the law which was always there. The state, whose very name is for

its waters; the Rishis, Munis, Gurus and poets composed and sang songs in praise of our waters, are grossly dirty, polluted, and poisonous. The water which is a basic source of life is a source of ill health and death now. What a shame?

4. **Unregulated use of Fossil Fuels:** the excessive and unregulated use of fossil fuels for vehicles, for electricity production and for domestic purposes is also adding highly poisonous chemicals to our environment. For example, Coal Based Thermal Power Plants are known to add dangerous toxins into our environment. The other major polluters through fossil fuels are industry, mechanized and chemical agriculture and vehicles
5. **Radio Active Toxins:** For the last few years it is being pointed out that Depleted Uranium, which was used in two Gulf Wars and Afghanistan War has spread to the surrounding regions. In India it was first pointed out by Retired. Naval Chief, Admiral Vishnu Bhagwat in 2004. DU Mapping of the region around Kabul and Basra has been done by those who are following this issue since it came to light. Now it has spread to 1000 miles radius around Kabul and Basra. The mapping done for the presence of uranium is shown in the map



below.

North West India which includes whole of Undivided Pre partition Punjab comes in this circle of 1000 miles from Kabul. The Studies done in Punjab prove it. The presence of Uranium in the hair of 87% of children of Baba Farid Centre, the water samples by Baba Farid Centre and by GNDU Amritsar and the studies of food chain go to establish that Uranium is definitely there in our environment, food chain and whole of ecosystem including our bodies in much higher concentration.

Whether source is Gulf /Afghanistan Wars? Most probably the source is this one. But we should keep our minds open. Some other source may also be contributing to the high levels of Uranium in this region.

**6. BPA and Other Plastic Based Toxins:** The irrational use of plastics, their production and unscientific disposal scatters plastic based toxins into the environment which are persistent in nature and are highly toxic. Large numbers of studies prove their toxic nature and scientists all over the world are asking for ban on the use of plastics for storing foods. They are also demanding a strict ban on use and throw type plastic containers and envelops which are playing havoc with the environment.

**7. Unregulated and Unscientific Waste Disposal:** Disposal of solid and liquid waste is done in highly polluting way. To cite only one example- go to any street in our cities you will find the sweepers are burning their collected waste. It is a mixed type of waste containing even plastic and rubber which is burning all around in our cities. The precious organic waste like

fallen leaves (which should have been returned to the earth are also being burnt. Similarly highly toxic liquid waste from city sewers is being thrown into the fresh water streams without any treatment with disastrous consequences.

**8. Heavy Metals:** Metals like arsenic, mercury, lead, aluminum and cadmium, which are prevalent in many areas of our environment, can accumulate in soft tissues of the body. Cancer, neurological disorders, Alzheimer's disease, foggy head, fatigue, nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels are some of the ill health effects of excessive heavy metals in our environment.

Heavy Metals come from Drinking water, fish, vaccines, pesticides, preserved wood, antiperspirant, building materials, dental amalgams, chlorine plants and many Pharmaceuticals.

**9. Pharmaceuticals:** Thousands of tons of toxic pharmaceutical are being thrown into water streams or thrown in the soil. Why?? They have not been used timely and expiry date has reached. Chemists and Hospital throw tons of their expired drugs into water bodies or dump on the soil. Patient purchased but did not consume because of large number of reasons- thrown into dust bin or sewer. In the process of manufacturing of drugs, the industry may be throwing the pharmaceuticals in the environment.

**10. GM Toxicity:** Bt Cotton was brought to India under the deceitful version of cotton being not a food crop because in India there was clear cut ban of Bt technology for food crops. But now these foreign MNCs are making serious efforts to bring GM/Bt food crops in India. There are lots of studies/ observations which show that this technology has lots of adverse impacts on human and animal health and ecosystem. There is a large body of evidence which clearly shows that GM Technology has the potential to prove the biggest ecological disaster. But MNCs are pushing it for very narrow and selfish ends.

### **Manifestations of Toxicity:**

**We are now amply sure that we are a toxicity affected community. But how to suspect and diagnose it?**

### **Manifestations of Human Health:**

All the tissues/organs of human body function on the basis of very delicate chemicals (hormones and enzymes etc.). Presence of strong/toxic chemicals (particularly the ones which are man made/not natural) in the body disturbs the body functioning and give rise to diseases/malfunctioning. Any toxin in the environment quickly reaches food chain, water cycle and human body. Whenever it reaches in the body, it tries to throw it out. The speed/efficiency with which the body can detoxify the toxin varies from person to person and depends on large number of factors. If the body is not able to throw it out with the speed at which it is entering the body, it accumulates gradually to dangerous levels and produces disease state.

Once a toxin reaches a critical level in the body, it damages cell wall/ other cellular components including genes. Once the cell components are damaged, the body becomes highly prone to various types of infectious and non infectious diseases. Following are some of the manifestations in relation to human health: In addition to being neurotoxic, these compounds are profoundly immunotoxic and are often toxic to the endocrine system

as well. The adverse health effects are not limited to those systems only, as these compounds can also cause a variety of *dermatological, gastrointestinal, genitourinary, respiratory, musculoskeletal and craniological* / problems. Heavy metals poison a diverse range of enzyme function, affecting virtually every system of the body.

***The prevalence of all of the following has tremendously increased in Punjab as compared to 20-30 years back. Go to any village, you can get the observations of the men in the street. Don't go by the statistics of our health department. These people are cut off from the people. They have no statistics or their figures are entirely wrong.***

**1. Gastro intestinal symptoms:** Diminished appetite, urge to go to latrine as soon as we eat food, diarrhea, nausea, vomiting, burning sensation in the stomach, bloated abdomen and gas formation etc. are very common in our rural community which is being affected by toxicity. The majority of our people are suffering from such signs and symptoms. In the villages on the banks of drains like Teja Ruhela and Duna Nanka of Fazilka Area (which have been extensively reported by the media), every body had these type of problems. The villagers challenged us-“Go to the village, you can't find a single person who is not suffering from pet di bimaari”

**2. Repeated episodes of Coryza:** ‘Zucaam’ (Coryza), cough with fever, pus from ears and other upper respiratory (recurrent or chronic type) problems are very common in Punjab. Earlier our people used to have one episode of ‘zucam’ in the beginning of winter season. But now large number of Punjabis, more so the children suffer from as many as six episodes of ‘zucam’ in one year.

### **3. Lowered Immunity/ Immunotoxicity**

Members of the community under toxicity will exhibit signs of lowered immunity. Punjabis are visibly showing signs of Lowered Immunity. They catch all diseases more easily than a community not under toxicity. The prevalence of many diseases have increased significantly and they are more serious and life threatening in nature. The evidence of lowered Immunity is very obvious in most of the Punjabis. Perpetually rising prevalence of Bacterial, Viral and Fungal Infections—Respiratory, Gut, Liver (Hepatitis-A, B, C, D and E etc.); Nervous System, GIT, Skin and other organs is obvious. Rising prevalence of Drug resistance in Bacterial and Fungal Diseases (TB, Typhoid, UTI, STIs Hospital Acquired Infections) etc. is also visible in our people. The most dangerous disease-Tuberculosis is increasingly becoming MDR (Multi Drug Resistant).

Environmental chemicals have a wide range of damaging effects on the function of the immune system. These range from decreased cell-mediated immunity (with a decrease in infection and tumor fighting capacity) to increased *sensitivity* (allergy) and increased *autoimmunity*.

### **4. Autoimmune Diseases and Immunotoxicity**

The development of autoimmunity has been linked with chemical exposure as well. The notion of chemically-induced autoimmune states is not new; since many chemicals are known to induce the onset of *Systemic Lupus Erythematosus* (SLE). Some chemicals, like formaldehyde and other volatile organic compounds, are thought to induce tissue-specific autoimmune reactions by acting as *hapten*s. These low-molecular-weight molecules will bind

to various tissues in the body, making a new antigenic combination. The immune system then makes an antibody to this new combination which can attack the parent tissue with or without the chemicals being present. Chemically exposed individuals will often present with elevated antibodies to certain body tissues, including anti-myelin, anti-parietal, anti-brush border. The prevalence of diseases falling in this category have tremendously risen in Punjab.

**5.Vague Symptoms:** Vague symptoms like aches and pains, headache, irritability, Chronic Fatigue Syndrome, Sick Building Syndrome, Multiple Chemical Sensitivity (MCS), diminished memory, feeling of not being well, lack of confidence, feeling of unhappiness, lowered anger threshold, lack of enthusiasm, lack of vigor and decreased libido etc are found very frequently in a community under toxicity. This has led to the increased prevalence of Addictions (Drug Abuse/Substance Abuse) to overcome this feeling and for having a feeling of VAHO, which should have been natural in a healthy person. In Punjab most of the people are suffering from such symptoms.

**6.Musculo-Skeletal Disorders:** Bone and Joint problems are highly prevalent in our villages. It is well established now that chronic toxicity is the major culprit. In Punjab there is flood of this category of ill health.

**7.Anemia:** Anemia is very common manifestation of toxicity. Anemia in our people is so universal that it is rare to find a child or a woman with normal hemoglobin. Now it is common even in adult males, which never used to be earlier. It is established fact now that chronic toxicity hinders in the synthesis of hemoglobin.

**8.Growth and Development:** All grades of adverse effects on growth and development will be seen. The number of stunted / under weight people has increased tremendously. We find quite a number of people with stunted growth. Similarly the people with delayed development are quite common.

**9. Neurological /Psychological Manifestations /Neurotoxicity:** The evidence of damage to the nervous system is in plenty. The children with learning disabilities, ADHD, ADD, Autism and gross mental retardation with or without Cerebral Palsy and large number of other neurological / psychological disorders including drug/substance abuse have increased remarkably.

**Every village of Punjab is having 5-20 severely affected individuals.** It is well known that for every severely affected person there will be ten moderately or mildly affected ones which will not be visible to the ordinary person. Such people are usually brushed aside as – duffers-dull-naughty-hyper active-disobedient-slow-sluggish-angry etc. etc. They are always being rebuked by parents and teachers for no fault of theirs.

The nervous system is a particularly sensitive target for toxic agents for several reasons. Besides the nervous system being such a good target, there are powerful neurotoxic agents available to attack it. Most of the major classes of pesticides kill pests by attacking their nervous system. They are neurotoxins by design. The OCCs affect the nerve by disrupting the ion flow along the axon. The OPs, which came out of nerve gas research and carbamates, affect acetyl cholinesterase resulting in excessive *acetylcholine* levels in the synapses. Solvents, some of which were originally used as anesthetics, dampen the propagation and transmission of electrical impulses along the nerve axons. All of these

agents produce various forms of toxic *encephalopathy* (acute or chronic, selective or diffuse toxic encephalopathy), as neuronopathies, axonopathies, *myelinopathies* or *vasculopathies*.

**10.Reproductive System Effects:** Our Reproductive System is the most sensitive system to be affected by the toxicity first of all other systems. Here multiplication of cells is the fastest of all other tissues. Our gonads and the developing child in the mother's womb are very sensitive to toxins. That is perhaps the reason that whole spectrum of effects of toxicity are visible in Punjab. The effect of environmental chemicals, especially the *estrogenic OCCs*, is well documented. While many are estrogenic by themselves, when combined together, their estrogenicity can increase by a factor of 1,600. Some combinations can also cause previously non-estrogenic compounds to become estrogenic. However, there are also non-estrogenic toxic effects of the OCCs on both male and female reproduction. High levels of OCCs in the serum have been strongly linked to infertility, stillbirths and miscarriages. Urban air pollution has been associated with reduced male fertility. While there appears to be a worldwide decline in the sperm levels of males, males who are organic farmers have very high sperm density. This gives rise to the supposition that exposure to environmental chemicals lowers sperm levels, and that avoidance of such chemicals may help to bring the levels back up. There have been multiple studies on one OCC that is used agriculturally--*dibromochloropropane* (DBCP)--looking at its effect on sperm levels. These studies have demonstrated that exposure to DBCP leads to *azospermia*, and severe *oligospermia*. This may be only associated with DBCP or it may serve as a model of other OCC-induced spermatogenesis problems. Heavy metals such as lead and mercury, organic solvents, alcohol, and ionizing radiation are confirmed environmental teratogens, and exposure could contribute to pregnancy loss. Published data indicate that chemical exposures causes alterations in reproductive behavior and contribute to sub fecundity, infertility, pregnancy loss, growth retardation, intrauterine fetal demise, birth defect, and ovarian failure in laboratory animals and wildlife. Data on the association of chemical exposures and adverse reproductive outcomes in humans is available.. Studies indicate that chemical exposures are associated with infertility, spontaneous abortion, or reproductive cancer in women.

To count those which are glaringly visible in the Punjabis are--

- (I) **Decreased Sperm Count** –there are studies which strongly prove that environmental toxins reduce the sperm count. From grand father to grand son sperm count has come down to half.
- (II) **Erectile Dysfunction**—Erectile Dysfunction has become a common problem in the middle aged adults and even many young ones. The use of Sildenafil, Tadalafil and other Aphrodesiacs has tremendously increased. They sell like hot cakes. If you want to have a idea about the extent of their use-go to a chemist (who is friendly to you –otherwise he wouldn't tell)
- (III) **Premature Menarche in Girls**-Many of the girls are having pre mature menarche at 9-10 years of age in Punjab-earlier by 2-3 years.
- (IV) **Delayed Puberty in Boys**-- Similarly the boys are having puberty 2-3 years later than earlier i.e. 30 years back.
- (V) **Rising Prevalence of Menstrual Disorders, Uterine Fibroids, And Ovarian Cysts**: These diseases have increased markedly in Punjab. You will come across large number of women whose uterus and ovaries have been removed.

- (VI) **Spontaneous Abortions**—large number (one fourth to half) of women of reproductive age group is having repeated Spontaneous Abortions. They have to take Hormonal Injections to complete their period of pregnancy (gestation). This phenomenon has become very common.
- (VII) **Premature Births, Still Births, Early Childhood Deaths have increased.**—the children are getting born prematurely. They have to be kept in Incubators in NICUs (Neonatal Intensive Care Units) to save them.
- (VIII) **Childless Couples.** The number of Childless Couples has increased many folds as compared to 30 years back. We can easily find 5-20 Childless Couples in all our villages depending upon the size of the village. In addition we can find an equal number of couples who have conceived with assistance from the Fertility Clinic.
- (IX) **Congenital Abnormalities:** The prevalence of congenital abnormalities have increased manifold. In males—the children are born without testes, with undescended testes, with hypospadias (an abnormality of the opening of the penis), with testicular cancer, with poor semen quality, or with abnormally small penises. In females—similar abnormalities occur in females also. There are large number of other congenital abnormalities like Neural Tube Defects, T-O Fistulas, Talpes Equinovarus etc. which are also seen frequently in Punjab. Estrogen mimics and other type of toxins are widespread in the environment. Apart from Pesticides and Heavy Metals they are found in such commonly used products as paints, toiletries, and spermicides and as a breakdown product of the plastics used in some water jugs and baby bottles.

**11. Kidney Diseases:** Kidney problems are on the rise. Kidney Stones are very common in these areas. Other Kidney Diseases are also rising.

**12. Skin and Hair Diseases:** Fungal skin infections, Scabies, Bacterial and Viral Diseases of Skin, Skin Allergies, Excessive Falling of Hair, Pre-mature graying of Hair and large number of Skin Disorders have increased.

**13. Liver Damage:** liver problems are on the rise. Hepatitis B and C; Gall Bladder Disease etc have tremendously gone up.

**14. Cancers / Toxin Associated Cancers:** The Number of people developing Cancers is tremendously increasing. In USA, a study showed that men born in the 1940s had twice as many cancers as those born in 1888-1897, and more than twice as many cancers not linked to smoking. Women born in the 1940s had 50% more cancers, and 30% more cancers not linked to smoking. One of the cancers that has a very clear association with environmental chemicals is breast cancer.

Childhood Cancers--Childhood cancers have also been evaluated for epidemiological association with chemical exposure. In one study, 45 childhood brain cancer patients were compared with 85 friend controls. It showed clear cut association with chemical toxicity. For adults, the use of *chlorophenoxy acid* herbicides (2,4-D) has been strongly associated with an increased incidence of lung cancer, stomach cancer, leukemia, Hodgkin's lymphoma (two studies found a five-fold increased risk), non-Hodgkin's lymphomas (NHL) (five-to six-fold increased risk), and soft tissue *sarcomas* (many studies have found five- to seven-fold increased risk, with one review study finding a 40-fold increased risk). One study showed Kansas farmers having a six-fold increased risk of *lymphomas* and soft



tissue *sarcomas* in persons using it 20+ days/year compared with non-exposed individuals. Those who mixed and applied herbicides and were exposed 20+ days/year were eight times as likely to contract NHL. Several studies have associated exposure to solvents with acute *myelogenous leukemia* (AML), *multiple myeloma*, and other forms of leukemia. Another study which looked at the cancer risk for painters showed increased cancer rates for multiple myeloma, bladder tumors, as well as kidney and other urothelial tumors. A study in Sweden of 275 confirmed diagnoses of multiple myeloma. This study revealed that exposures to *chlorophenoxy acid* herbicides (2, 4-D) and DDT were prime risk factors.

**15.Genetic Mutations:** The study done by PGI Chandigarh, clearly showed that we, the Punjabis are getting our genes damaged because of environmental toxins. What is the meaning of it? This means that the person is not suffering from any disease at present but may suffer in later life or his coming generations will suffer from the ill effects of damaged genes.

### **Health Effects on Animals:**

The effects of Environmental Toxins on wild animals and cattle are exactly alike to the effects on human beings. However as we do not deal with animals so closely and passionately as we deal with humans, we usually see only crude effects and miss the fine ones. Some of the effects which are visible in Punjab are ---

1. Large number of wild animals which were in plenty 20-30 years back are either not visible now or are too much reduced in number. A large number of birds - vulture, eagle family, crows, a large variety of sparrows and other birds are either totally gone or are in the process of being eliminated totally. Out of the 10000 species of sparrows, 7000 are already extinct while others are in the process of extinction. Earthworms are totally missing from the fields under chemical farming but are present where no chemicals are used. Fish, Frogs, Toads, Snakes and large number of Reptiles are drastically less in number as compared to three decades back. Termites, Ghumaars, Cheechak Vahauti, Jugnus and large number of friendly animals living in the fields are either missing or drastically reduced.

2. The Honey Bees are a barometer of the environment. Albert Einstein speculated that "If the bee disappeared off the surface of the globe, then man would only have four years of life left."

Honey Bee which is considered to be a very sensitive index of Environmental Toxicity is almost gone. There were two varieties (one large one called Doonnan and small one) which were very common site in Punjab are rarely visible now.

3. Our cattle show a large spectrum of health effects because of Environmental Toxicity. The spectrum is similar to the one seen in human beings. The most prominent effects which affect us directly are noticed by our peasants—

- I. The milk yield is less by 30% as compared to 20-30 years back.
- II. The numbers of times the cattle get pregnant are also less by 30% e.g. a buffalo used to be pregnant about 15 times in her life span earlier. But they never cross 10 now.

- III. Sterility amongst cattle has become very frequent. About 25 % don't get pregnant at all. Another 25% abort the fetus. They have to be given Hormone Injections to save their pregnancy to full term.
- IV. The rate of falling sick is very high in the cattle. The disease pattern is similar to humans exposed to toxicity.
- V. Large numbers of cattle die prematurely.

If the bodies of our milk yielding, egg laying and meat giving animals are full of toxins and they are sick because of these toxins-what will happen to our health?

### **Effects on Plants /Crops /Agriculture/Farmers/Biodiversity:**

Just like Animal Biodiversity, our Plant Biodiversity is being destroyed very fast. Large numbers of plant species are fast disappearing. With Wheat-Rice Cycle and because of the irrational and blind use of Herbicides, large numbers of plant species which had health imparting and medicinal values have disappeared. Those which are there, are full of toxins and because of the presence of these toxins their health imparting and medicinal value is no more the same as were before the use of agricultural poisons. On the contrary they may become cause of ill health because of these toxins.

The crops have become dependent on the use of these poisons. Farmer knows very clearly that the inputs he is using are poisonous. He knows that he is poisoning his own family and he is the sinner of poisoning other's families. But he feels helpless because the decision making power has been snatched from him under a deep rooted and planned conspiracy. The whole process / techniques of Chemical Agriculture have shattered his faith on himself, on his religion /gurus and on the Nature /God. He has been made a partner in the mass murder of insects /plants /living beings and destruction of soil, water and nature. His profession which was divine in nature has been converted into a devil's workshop. He suffers from a guilt complex and the consequences of feeling guilty are very grave. The prevalence of psychiatric disorders including suicides and addictions has attained epidemic proportions in the farmers' families.

Our Ayurvedic System which is based on the medicinal qualities of plants is under attack. How can a plant full of toxins act as medicine? The people are falling sick en masse and in the absence of curing food and herbs, the people are being forced to take allopathic drugs which are themselves very dirty poisons.

The whole Food Chain in Punjab has been shattered. The poison moves from lower living beings to higher ones. In the process, the poison levels rise by the process of Bioconcentration and Biomagnification. Those are the reason, the animals higher in food chain, start falling ill and die prematurely. They are not able to reproduce. That is the way they get eliminated.

The plants have become weak. They need artificial support system (chemical fertilizers, pesticides and plenty of water) without which they don't grow. Being biologically weak, the pests attack them to destroy them.

The constant use of chemical farming techniques and lack of biomass in the soil has depleted micro nutrients in the soil. So in addition to having lots of poisons, our foods are deficient in micronutrients. Plants need about 32 types of nutrients to grow properly/ naturally and give nourishing food to animals and humans. We add three in NPK and plants take Carbon from air. What about rest 28 nutrients. They have to come from the soil. They are not present in the soil firstly because of our chemical farming techniques and secondly

even if they are there the microbes are not there which were to convert these nutrients to usable form.

The emergence of Super Weeds and Poisonous Plants is already happening because of the extensive use of herbicides and GM techniques.

### **Effects on Air / Water / Soil:**

The Human Health does not exist in isolation. Human Health is part of a bigger phenomenon which includes Animal Health and the Health of the Plants which the animals and humans consume as food. It is still it is not the complete truth. The complete truth is that the Health of all Living Beings is part of even a bigger phenomenon in which health of air, water and soil is part of this totality. The truth will be very clear if we try to understand the whole phenomenon in this Holistic Way.

In Punjab, our air, water, soil- are full of poisons. The poisons, we are manufacturing and using in our surroundings has made our air, water and soil ('pawan-guru; paani-pita; maata-dharat mahat) thoroughly sick. They (guru, pita and maata) are dying. Their Life Giving Properties have been weakened. That is why their children-plants, animals and humans are falling sick and dying prematurely. The Plants and Animals have no awareness to stop it but what about us?

The forests have been destroyed en masse. Rain fall is decreasing and becoming unpredictable. We are over using the ground water. The Aquifers at about 30, 70 and 150 feet are already dry. This has happened in just two decades. The toxic surface water has polluted the underlying ground water also. The water of deeper Aquifers is heavy. It is not fit for human consumption. Most of the times, it is unfit for animal drinking and also for agriculture. More over it is fossil water-hundreds of years old. How far will it last? What after that??

Chemical Farming and method of Rice Cultivation has made the soil very hard. Rate of recharging of aquifers from the rain water has grossly decreased. So the dried up Aquifers at 30, 70 and 150 don't fill up again.

The fertility of the soil is continuously decreasing. The chemical ways of Chemical Farming to keep up the soil fertility are getting exhausted. We have killed the microbes and bigger animals which were not only keeping up but were continuously increasing the fertility of soil. We are not adding any bio mass. We are not returning to the earth what we were supposed to return. We are burning the dry leaves and other types of plant waste. Burning Plant Waste is burning our future. If the natural law is allowed to operate, the soil becomes richer and richer with the production of crops. But we are not allowing the natural law to operate.

In nut shell this is a glimpse of the reality of life in Punjab. The reality is very ugly. We are heading slowly towards final death. All living beings die-that is a natural phenomenon. But this is a special death-we will not be replaced by our next generations. We are trying to kill insects. They are evolutionally much stronger than us. They are equipped much better to tide over the adversity. We will not be able to tolerate the poisons we are using for them.

Shall we be passive spectators to this game which people are calling ENVORONMENTAL GENOCIDE???

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