

The Punjab Experience: Miracles and Reality

One thing for certain, the Punjabis I met are incredibly kind.

In spite of arriving at Amritsar airport at 3AM in the morning, I was greeted personally by Prof. Chander Parkash of the Technical University in Jalandhar. Prof. Parkash was involved in arranging the 2012 Expo, Science and Global Development, a huge event. It attracted thousands of people, professionals and students alike. Because his university had invited me to be a guest speaker, he considered it his personal duty to take care of me during my visit. He took me to his house to meet his family. Incredible!



Family of Prof. Chander Parkash, Amritsar

Environmental causes are concerns, slowly engaging Indians. Metal toxicology is virtually unknown, but the uranium issue raised by our study of Punjabi children (Metal Exposure in the Children of Punjab. *Clinical Medicine Insights: Therapeutics*. 2010;2: 655–661) struck a cord. Over 80% of the tested showed high uranium in hair and urine, reflecting immediate and long term exposure. Almost feverishly, water and soil studies were undertaken; water and soil concentrations uranium and arsenic came up high. Studies by the Atomic Energy Commission confirmed some of our findings, and the media roared. As a result, the government has taken notice. Home water filtration systems are now provided to affected households.

There is more to this. During the last years, the Malwa region of Punjab has seen a sharp increase in cancer and other diseases. Because activist groups relentlessly focus on the uranium issue, causing media attention, universities took notice. Indeed, this year's expo focused on environmental problems.

While the osmosis systems distributed to affected households have somewhat calmed villagers, the growing number of activists does not consider it a sufficient solution. High cancer rates as seen in clusters of certain villages around Faridkot and Bathinda are considered to be the result of the arsenic and uranium issue. People are scared. Farmers fear for their lives.

Punjab, which is located in the north of India near the Pakistan border, is considered the bread basket of India. Over fertilization and generous use of pesticides are well-known facts of present farming life. Homes depend on small wells with hand pumps (as I remember from my youth). Problem is that water levels have changed, and the few tests performed by universities and governmental agencies. Cadmium was never mentioned.

Panel discussion with faculty members and researchers identified the high saline content of the water as a problem, causing leaching of uranium from rock into ground water. Testing has shown that a great number of the water wells tested exceed WHO limits for uranium.

<http://www.youtube.com/watch?v=ZhGf9cbli5g>

The salinity of the water increases the solubility of metals such as uranium from phosphate fertilizers, - and over fertilization is an acknowledged and widely discussed problem. These fertilizers can be the source of uranium, cadmium and other metals.

(<http://www.epa.gov/radiation/tenorm/fertilizer.html>; also D Barišić, S Lulić, P Miletić Radium and uranium in phosphate fertilizers and their impact on the radioactivity of waters. Water Research, 1992 Volume 26, Issue 5, May 1992, Pages 607–611)

In the early evening of Oct.12, and in spite of the expo being attended by honoured visitors from around India and thousands of students, Prof. Parkash and some of his colleagues accompanied me to visit the Golden Temple in Amritsar, the spiritual center of Sikhism. Interestingly and astonishingly, this beautiful site serves as a spiritual center for all religions, may they be Sikh, Hindu, Muslim or Christian.



Visitors waiting in line to enter the Golden Temple

The Golden Temple is a crowded place at any time, day and night. Thousands of Indians and tourists from all over the world visit this incredible place, patiently waiting in seemingly

endless lines to enter sanctuaries, observing religious rites. Some people take a bath in the water surrounding the Golden Temple, many bring blankets to rest or sleep on the white stoned walkways. Albeit the masses, it is a peaceful, quiet and spotless place with a positive energy. Not a crumb soils the ground! Go outside the temple site and garbage piles up high, source of food for the many stray dogs.

I observed rituals, followed my hosts and something unusual happened: the high priest, generally not seen by temple visitors called me in for a personal visit. I sat with him, listened to him speaking Punjabi and while I did not understand one word, I comprehended his message. I asked for energy to be able to complete my mission, and I received it. We had tea and he asked me to be an overnight guest at the temple during the time of my stay in India. We agreed on the 14th of Oct.

On the 13th, I spoke to an audience of thousands. It was midday, sunny, with temperatures soaring above 35°C in the large tent we gathered. In spite of the heat, the spirit of the people was exhilarating and uplifting. It helped us all rise to the challenge.



Listeners at Lovely Professional University Expo 2012

Lovely Professional University is a private campus housing 25000+ students from 28 countries. It is a private university spread over 600+ acres of land on the National Highway No.1 at the entry of Jalandhar city in Punjab. It is a prestigious and diverse place. This year, the expo focused on socio-economical, agricultural and environmental issues. My presentation on metal toxicology and environmental issues as they apply to Punjab was well received.

The vice-chancellor called me in for a meeting. I sat with faculty members, discussing environmental and medical issues at hand - and again something special happened. The

attending faculty members unanimously agreed to start a pilot program that would focus on environmental issues as they apply to Punjabi people's health. We evaluated present studies, which document that the Malwa region of Punjab has an unusual increase in cancer growth (and other diseases). We agreed that a follow pilot study, including testing of water, soil and humans in areas of concern, aimed at identifying or ruling out the much discussed potential causes, pesticides and toxic metals. We agreed to find immediate solutions for the growing health and economical problems that face the Malwa region, and we hope to find solutions to prevent future problems. The vice-chancellor was positive about governmental and private funding. We shall see.



Meeting and panel discussion with the Vice-Chancellor of the Lovely Professional University (1. from the right). Prof. Chander Parkash from the Technical University (2nd from right)



Panel Discussion with researchers and various faculty members.

Prof. Chander Parkash is a faculty member of Punjab Technical University, School of Science, Engineering and Technology. His Vice Chancellor Prof. Rajneesh Arora also called us for a meeting- and again something unexpected happened. The Vice Chancellor, a man of few words, asked us to establish a program and protocol within the next two days. He agreed to a the pilot program we had outlined in just a few sentences and he freed Prof. Parkash from his daily duties to accompany me to affected villages and other affairs to get a better understanding for the problems at hand. A written proposal was offered to the vice-chancellor in time. We are awaiting his response.

On the 14th, I was taken to the Golden Temple again. Sikhs accompanied me. Due to late meetings, we arrived past midnight, but the place was more crowded than before. It seemed that all of Amritsar was here to celebrate. Chanting took place during ceremonies and in spite of the thousands of people, it was relatively quiet. Occasionally, a child's cry parted the peaceful atmosphere. Nobody minded.

On the 15th, we visited the Faridkot Children Center, the place from where we received the samples for the MTM study, Metal Exposure in the Physically and Mentally Challenged Children of Punjab, India (Maedica, Vol 5, No2, 2010). This study is now listed in the US National Library of Medicine. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3150007/> Dr. Pritpal Singh, his staff, parents and children awaited and greeted us in Hindu tradition. I talked with parents, held children, provided suggestions when possible.



Assembly of the Faridkot Children Center staff (in back) before press conference

The press conference went well. For more info see <http://www.tribuneindia.com/2012/20121017/bathinda.htm>

Later that day, we went to nearby villages where cancer rates had soared in recent years. We talked with families and cancer patients, observed children with serious physical and mental developmental problems and experienced the despair and hope of many parents. We observed people's lifestyle, eating and drinking habits, watched food preparations, shared tea while listening to heartbreaking stories. We watched people pump water from wells for drinking and cooking while children quietly observed us. Our presence seemed to provide hope. We could not give more than that.



Inside the walled property of a small farmer whose family suffered tragedies, attributed by environmental causes

Cows walk village streets, unconcerned about people, aloof to trucks, cars, mopeds and other types of vehicles, jamming streets. Punjabi villagers live modestly, respectful of each other and visitors. Their homes are spotless, but garbage piles high in the streets, providing remnant and modest food for the many stray dogs. Garbage and dogs are unnoticed by the people around them. Fields surrounding villages are burned after harvest and this afternoon, winds mixed heavy clouds of ash with sand. Phosphate fertilizers are considered a necessary evil, but chemical fertilization and genetically-altered seeds are used by most farmers. Organic farming is becoming an issue, activists push. Yet most farmers, all of them small, are afraid to change to biological means of fertilization. Their main concern is yield reduction, which means the lowering of an already modest income.



Inside the walled property of a small farmer whose family suffered tragedies

To Punjabis, health is God given. Government has not developed a successful social health program. Health is a vital blessing. Those who are ill are on their own-literally. For most, doctor visits are unaffordable. No money means no treatment. While the poor can go to Government hospitals, the hope for good treatment is small. Most government hospitals are in bad condition. Poorly paid doctors lacking instrumentation and medication can't give proper attention to patients. Large crowds are waiting, overwhelming administration and medical staff. Fake medicines are a big problem. Just recently, many people died receiving them, including people with heart problems. Private hospitals and doctors exist, but they are unaffordable to the villagers we saw.



Village woman washing. People in her village show an extremely high rate of cancer and childhood diseases

We gathered useful information for our pilot study, and were able to provide the first draft to Vice Chancellor Dr. Rajneesh Arora of the Technical University within the requested time. This first draft of our research proposal is simple. If funds allow, we will extend it. We see this as Step 1 in a multi-step research that has three objectives:

1. Test for metal exposure and pesticides in a healthy test group vs. a group of cancer patients. We proposed to correlate children with adults, females with males as cancer rates of children have also increased. The total number of samples proposed to be included in the study is 150.
2. Evaluate the test group for pesticide exposure
3. Evaluate ground water and soil for metal content.
4. Evaluate the toxic metal content of the most commonly used fertilizers
5. Statistically evaluate if toxic metals and pesticides are linked to the rise in cancer.
6. Provide alternative solutions to improve the health of the people and the land.



Some of the children I met during my visit to the Faridkot Children Center where the poor can receive free treatment

For now, it is our hope that the people in charge are able to come up with funding. Because financial decisions take time, I propose that we immediately start with Part 1 of the program, the metal testing of the people.

After we identified the cause of a problem, we are closer to solving it.
If we don't start now, when?

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