

# Kanpur Tanneries and its Environmental Impacts: The Jajmau Case

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**Abstract:** *This case study is about the tanneries in the Jajmau area. There is no debate that the tanneries are quite important in adding value in the economy as the products are in quite demand. It encompasses the exports as well the domestic demand. The problem arises when we look beyond this profitable business. The impact that it is having on the environment is irreparable and irreplaceable. In this paper the diverse problems are discussed as both population and industries coexist. Skin problems, physical deformity and mental problems, toxic fields, overcrowding etc are some of the problems. In the next section I will try to explain that how the tannery industries are not able to reach their socially optimal production. The market fails when the Environmental problems are not incorporated in the production process. Using valuation methods the paper try to analyze the environmental costs which if included the production doesn't reach the socially optimal production level.*

**Keywords:** costs, pollution control, health

JEL-D24, R110, I10

## 1. Introduction

Kanpur tannery has a long legacy and it is one of the oldest industries in Kanpur. It came up to be a major industry as the place was privileged to be the military base. There was some ready availability of agents which helped the industry to flourish. The industry which is very often linked to pollution now was helpful in floriculture. The solids in the effluents were filtered and then diluted with Ganga water. This was a process which was carried out in the past when a very few tanneries were operating. The leather industry here is the major export sector of the country but now have allegations that it has polluted the city making it worse for people to survive.

In Kanpur there is a place called Jajmau-an Industrial hub. It is situated near the Ganges. The main industry here is leather industry and it can be also called as the leather cluster of Kanpur. In the Jajmau area there are four major drains of Kanpur. It has the drains which is a catchment of all the water bodies that flow in and around the tannery cluster of Jajmau and whole of Kanpur. There are very a few interceptor stations that lie in the peripheries of the slums. The station is the powerhouse for the different treatment plants and it filters out some of the solid waste like excreta, animal waste and sludge. The treatment filter it out partially and these flow to the CETP (Common Effluent Treatment Plant) located at a distance of 20 km.

The Jajmau area industry cluster contains 400 tanneries. Most of the tanneries are chrome tanning industries. Chrome tanning uses solutions of chemicals to dye the hide. Chromium sulphate, cadmium etc and other harmful chemicals are used for dyeing which are very harmful for health. The water bodies are filled with methane, ammonia and hydrogen sulphide. According to the locals they see the color changing of the water bodies due to dyes that are used in the tanneries. The odour from sewage anywhere is same

as the blue black contents of these industries that flow throughout the place.

The break-up of the 400 tanneries in Jajmau area is as follows

- Large > 300 hide per day-06
- Medium 200-300 hide per day-08
- Small <200 hide per day-386
- Closed-77
- Operational-323

## 2. Problems

The problems that arise due to the tannery industries in Jajmau area are diverse. The Jajmau is populated densely and both residential area and industries co exist. The main water body Ganga has changed its color to black and various efforts to clean the Ganges was not fruitful or weakly implemented. The blame however also goes to the residents of the area too. The major problems that are faced in the Jajmau area are as follows.

- Skin problems
- Physical deformity and mental problems
- Fields are toxic
- Contaminated ground water resources
- Fumes from industries polluting air
- Overcrowding

The above stated problems are the negative externalities that are the result of tannery industries in the Jajmau cluster. Now I will explain them in detail and address them individually.

**Skin Problems**-The chemicals that are used in dyeing are chromium, cadmium etc. These chemicals are very harmful for the skin and are toxic. Coming in touch with these chemicals is hazardous and might cause rashes, itching and worse even skin cancer.

*“Krishna Devi and Sita Ram are just two of the many people afflicted by rare skin diseases. People in 20 villages living in the vicinity of the Jajmau tannery area in the city are in the grip of severe epidemic-like conditions. While most elders have varying degrees of stomach problems and skin diseases, the children are the worst affected. Worms pop out from their mouths each time they vomit. It is alleged that the cause for the malady is the tannery*

*discharge, which finds its way into the irrigation canal reaching these villages”*

The above extract is taken from the journal Down to Earth a fortnightly journal published in New Delhi assisted by Centre for Science and Environment. These skin diseases leads to spending of a lump sum of money on medical aids creating a hole in the pockets of the residents.



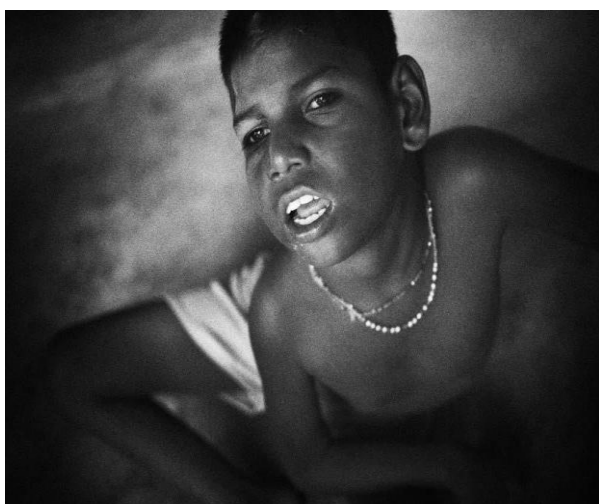
The first picture shows an old lady suffering from a skin disease near the neck area and the second picture show how the workers the tanning industries work in empty handed exposed very easily for such skin problems.

**Karan Ishad (5) of Jana village in Jajmau area is a neurological patient with physical and mental deformities since his birth**

**Physical Deformity And Mental Illness-**The cases physical deformity and mental illness in the Jajmau area has been increasing in the Jajmau area. Cases has been there a child is physically deformed or mentally ill since birth. These diseases can be attributed to the chromium contamination of water resources. Even if the children escape such kind of deformities yet the danger is still lurking on them. The children are continuously having diarrhea and other breathing problems like asthma etc. There is also high risk of Blue Baby disorder where ingestion of nitrate by infants can cause low oxygen levels in the blood. Again due to presence of fluoride the bones and teeth are also weakened. A picture of a child suffering from mental and physical deformity in Jajmau area is shown below.

**Fields Are Toxic-**It is a common practice to irrigate agricultural fields with the wastewater originating from industries and domestic sources. At Jajmau (Kanpur), India, tannery effluent is used for irrigation purposes. Earlier the tannery industries effluents were treated and used in the irrigation process and floriculture survived in this area. But with the growing use of chemicals in the dyeing process there are heavy metals found concentrated on the agricultural fields. The soil is being polluted and making the agricultural fields a land of crops which is danger for consumption.

**Contaminated Ground Water Resources-**The Jajmau area has 4 major drains that is a catchment of all the waste water. The sludge that come out from the tanneries go through the treatment plants which are not enough to treat them. The domestic sewage also are at large numbers and cannot be treated with the available treatment plants. When the no of tanneries were at a number 175 then the domestic sewage were mixed with the effluents making them biodegradable and less harmful to the environment. But the present number of industries (more than 400) create a huge amount of effluents which is impossible to treat in any way. The more CETP is therefore need of the hour. The location of CETP far away from the small treatment plants also is a major cause of water contamination.





A drain from the tanneries pours chromium contaminated untreated waste water in a canal at Jajmau area in Kanpur, Uttar Pradesh, India. The government run treatment plant is faulty and has failed to deliver to its promise of clean, treated water.

The cluster of industries in Jajmau also creates fumes from and released into the air. The fumes released in the air might be with toxic materials creating serious breathing problems and might create day to day problems to the commuters there.

#### Fumes from Industries



Fumes coming out of a factory in Jajmau area in Kanpur, Uttar Pradesh, India.

Overcrowding might be also a problem in the industrial area and might create a problem of space.

### 3. Market Failure

In this section I will try to explain that how the tannery industries are not able to reach their socially optimal production. The market fails when the Environmental problems are not incorporated in the production process. The industries are taking into the costs excluding the social cost that they are incurring. They are not obliged to pay compensation for the pollution that they are creating. The different failures that leads to market failure are as follows:

- Corruption from the mediators-The funds which may be extended for the improvement of the drainage and treatment systems may be meddled by the mediators.
- Lack of monitoring-The installation may be made compulsory in the treatment plants but many might install and escape it in order to cut their costs. They let the wastes out without treating them.
- Limited information-The residents might have limited information regarding the gravity of the problem in the Jajmau area.

### 4. Impact Evaluation

Two methods can be used to evaluate the environmental impacts in Jajmau.

**Method 1-Contigent Valuation Method-**The pollution caused in the underground water and also on the land and air may have an effect on both the agricultural produce and also on the health. Here contingent method can be used and the residents would be asked a question regarding how much compensation would they require to be paid so that they can carry on their lifestyle in such a polluted area. By going through the survey a demand curve can be constructed of the value of environment cleanliness to the residents. The Authority might concentrate on improving the area if the demand for a clean environment is very high. In calculating the compensation the residents will take into account the health cost and other expenses that they incur to get clean water and other safer facilities.

**Productivity Method-**Due to the pollution the productivity levels of the individuals might be deteriorating and this can be measured by this method. The people if remain constantly sick would not be able to go to their work which will affect the productivity of the workplace where they are employed. Again the water quality will affect the agricultural crops. Thus the economic benefits of improved water quality can be measured by the increased revenues from the agricultural productivity.

### 5. Probable Solutions

- The CETP present in the Jajmau area need to be upgraded so that the maximum amount of effluents can

be treated. The monthly checkup of the CETP plant is very important.

- Instead of offering the responsibility of treatment plants monitoring to the Jal Nigam of UP the Build own cooperative societies can be formed and they can manage the process of treating sewage.
- The people employed to the care and the performance of the CETP plant should be remunerated according to their work. Performance linked remuneration should be provided.
- Since most of the tanneries in Jajmau area are chrome tanneries. Therefore a chrome recovery plant should be established. The purpose may be that the solutions used to dye the leather can be reused and treated creating less harmful effects for the populace.
- Polluter pay principle can also be implemented. At times who is polluting is difficult to know and blaming one another is unending. Therefore Real Time Water Quality Monitoring should be set upstream and downstream. In this way the real culprit will pay for the effluent released unattended.

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