



## Health Risks Associated With Workers In Pesticide Factories

### KEYWORDS

Health, Pesticides, Pesticide factory, Health risks, Workers.

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**ABSTRACT** *The aim of this study was to investigate the health risks faced by the man power working in the pesticides factories at Jammu, India. Surveillance data show that pesticide-related illness is an important cause of diseases among the workers. Exposures occur in various ways (e.g., residues, drift, chemicals, etc.) suggesting that the use of pesticides creates a hazardous work environment for all the workers. In order to study the health hazards of pesticides on workers, two pesticide factories were included in the present study namely B.r.Agrotech Ltd and Bharat Insecticides Ltd, Sidco Industrial Area, Kathua, India. Total of 100 workers were included. Among them 50 were from B.r.Agrotech Ltd. and 50 from Bharat Insecticides factory. The workers were administered with the standard format questionnaire which was followed by personal interviews. The results indicate a visible impact on health of workers and during summers the health related problems increases. Majority of respondents were suffering from skin allergies (96%), allergic reactions (84%) including pain in chest, sneezing, shortness of breath, cough, stroke, irregular heartbeat, High B.P, eye irritation, anxiety and fatigue. Wheezing was also seen among the workers (92%). The workers responded very well to the interview and replied that they were mostly suffering from skin, respiratory and eye irritations. They were not given any safety devices during work. The workers generally received treatment by the health care centre of the factories. During summers the health related problems usually increases. The chi square analysis did not show any significant difference among the workers of both the factories.*

### INTRODUCTION:

Health is the level of functional or metabolic efficiency of a living organism. In humans, it is the general condition of a person's mind and body, usually meaning to be free from illness, injury or pain (as in "good health" or "healthy") (Oxford Dictionary).

The World Health Organization (WHO) 2002, defined health in its broader sense in 1946 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Although this definition has been subject to controversy, in particular as lacking operational value and because of the problem created by use of the word "complete," it remains the most enduring (WHO, 2006). Pesticide hazards should be ranked based on acute toxicity, chronic toxicity (including reproductive risks), carcinogenic potency, volume applied, and magnitude of worker poisonings (U.S. Commission on Agricultural Workers, 1992 and Mehta et.al., 2000). While injuries play a considerable role in the risks posed by farm work, pesticide-related illnesses affect a large number of workers each year. The importance of pesticide-related health problems in farm workers has been addressed by several authors (Villarejo and Barson, 1999, McDuffie et.al., 1995 and Moses, 1988). However, it has also been noted that there is a paucity of research involving farm-worker populations. One study concluded that it was not possible to accurately determine the nature and extent of occupational pesticide illness on farm (U.S. General Accounting Office, 1993). Pesticide related illness and injury have been recommended for placement under surveillance by the National Public Health Surveillance System, although the focus of this initiative has not specifically been on farm workers (Council of State & territorial epidemiologists, 1999). An expert panel convened by the National Institute for Occupational Safety and Health (NIOSH), part of a congressionally mandated agricultural health and safety initiative, recently ranked pesticide-related illness among farm workers as the second of nine priority areas to be targeted for surveillance (mus-

culoskeletal conditions received the highest ranking) (Vil-

larejo and Barson, 1999). Pesticide manufacture has caused environmental impacts at all stages of the process in the area. These include emissions of airborne pollution in the form of dust, gases, noise and vibration when operating machinery and during blasting in quarries, and damage to countryside from quarrying which can potentially contribute to Chronic Bronchitis, Silicosis and Interstitial lung diseases.

The impacts of pesticide industry are countless and it even did not spare humans from its deteriorating impacts and have adversely impacted health of workers. Exposure to pesticides has been linked to a number of different health outcomes, starting from modest transient changes in the respiratory tract and impaired pulmonary function, skin diseases continuing to restricted activity/reduced performance, emergency room visits and hospital admissions and to mortality (Schuhmacher et al., 2004; Aydin et al., 2010; Zeleke et al., 2010; Vestbo et al., 1900). The most severe effects in terms of the overall health burden include a significant reduction in life expectancy of the average population of workers by a month or more ( Samet et al., 2000), which is linked to the long-term exposure to high levels of air pollution with PM from these pesticide industries (Sheppard, 1990; Pope and Dockery, 2006; Grau, 2009). Thus the current surveillance effort should be supported. Risk prevention should focus on substitution of safer compounds, establishing effective protections, and ensuring that these measures are enforced. Improved education for health care providers should be a priority. Growers should be educated about alternative forms of pest control and incentives should be provided to encourage their use.

### II. STUDY SITE

Two factories were taken in consideration namely B.r.Agrotech Ltd. and Bharat Insecticides Ltd at Sidco In-

dustrial Area, Kathua, India lying in the same geographical area.

### III. METHODOLOGY

All subjects were served with a questionnaire and posed with interviews based on work of various organizations mostly University of Virginia questionnaires, California institute of technology, Environmental questions (ACE), department of health and ageing and Children health council, health and safety services and health questionnaires and WHO which were edited after going through literature (Maureen et al.,1860; Hofmeister et al.,1983; Dinah et al., 1990; Lesliam et al.,2005; Winston et al., 2005; Sengupta. S., 2006; UNEP, 2008) according to the need. The workers working in the pesticide industry were administered with the questionnaire and total of 100 workers were included. Among them 50 were from B.r.Agrotech Ltd. and 50 from Bharat Insecticides factory.

### IV. DATA ANALYSIS:

Data obtained by the use of the questionnaire was subjected to quantitative analysis. The percentages were calculated for the majority and minimal responses and statistical analysis of chi square was calculated using SPSS software (20<sup>th</sup> version).

### V. RESULTS AND DISCUSSION

The findings of the study along with discussion are presented as follows:

Equal number of workers were taken for the present research from both the factories (50 from each factory) with total of 100 workers.

**Table:1: Common ailments suffering by workers of pesticide factories**

*Common Ailments	B.r.Agrotech Ltd N=50		Bharat Insecticides Ltd N=50		TOTAL N= 100
	f	%	f	%	
Allergic Reactions	41	82	43	86	84
Fatigue	30	60	33	66	63
Skin Allergies	47	94	49	98	96
Eye Irritation	45	90	45	90	90
Swelling in legs, eyes and feet	31	62	36	72	67
Lung Cancer	5	10	3	6	8
Pneumonia	2	4	3	6	5
Tuberculosis	3	6	3	6	6
Asthma	7	14	4	8	11
Emphysema	3	6	8	16	11
Chronic Bronchitis	35	70	42	84	77

Wheezing	45	90	47	94	92
Chest pain	41	82	44	88	85
*Multiple responses, $\chi^2 = 0.13$ , d.f=, Table value=7.81, Insignificant at 0.05% level					

### Response to questionnaire

Table 1 reveals the different kinds of ailments recorded from the manpower serving as workers in the pesticide factories of the study area. Multiple ailments were studied among the respondents. Overall, majority of respondents were suffering from skin allergies (96%), allergic reactions (84%) including pain in chest, sneezing, shortness of breath, cough, stroke, irregular heartbeat, High B.P, eye irritation, anxiety and fatigue. Wheezing was also seen among the workers (92%). The workers responded very well to the interview and replied that they were mostly suffering from skin, respiratory and eye irritations. They were not given any safety devices during work. The workers generally received treatment by the health care centre of the factories. During summers the health related problems usually increases. The chi square analysis did not show any significant difference among the workers of both the factories.

Therefore, Risk prevention is the most important of the approaches to reduce pesticide-related illnesses among farm workers. Industrial hygiene principles recommend the removal of contaminants through material substitution as the preferred hazard-control strategy. The elimination of the use of toxic substances and the substitution of alternative methods is a primary goal of sustainable agriculture. Health care providers can act as advocates for farm-worker health by taking a stance against the use of toxic pesticides in agriculture. There is a need for increased research into alternative methods for pest control that are less harmful to both the environment and human health. In addition, it is crucial to provide education and incentives to growers to inform them of the availability of these alternatives and to encourage their use.

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