

# Harmful Effects on Work Force Because Of Emanation of Harmful Gases (Paint Industry)

Mahdi Alsagour

---

**Abstract:** This paper presents workforce safety program for reduction of possible health reactions on work force because of emanation of harmful gases in paint industry. Considering health concerns related to paint industry, the issues of occupational safety and prevention of professional diseases in the paint industry have become urgent problems to be addressed by both national and international health organizations. The negative effects imposed by paint, when especially added to headaches, allergic reactions or heart stressing, are among the dangers threatening workforce health. To ensure occupational safety and prevent professional diseases, employers are to develop and implement workforce safety programs, which, being properly managed will result in reduction of possible health reactions.

**Keywords:** Workforce Safety Program, paint industry, occupational safety.

---

## I. Introduction

The health affects of paint industry have been extensively recorded and reviewed by both national and international health agencies such as World Health Organization (WHO), Agency for Toxic Substances and Disease Registry (ATSDR), Centers for Disease Control and Prevention (CDC), US Environmental Protection Agency, National Institute for Occupational Safety and Health (NIOSH), etc. Much literature has been written on the adverse health issues in the paint industry and health impacts of paints on either children or adults.

Thus, for instance, the US Environmental Protection Agency (EPA), based on the conducted research on VOC (volatile organic compound) levels indoors while paint is drying, considers paint one of Top Five environmental hazards. The World Health Organization (WHO) in its researches primarily emphasizes on the health issues imposed on people working in the paint industry. Thus, according to WHO health reports, the painters have a 20% increased cancer risk. In addition, WHO has attached urgency and attention to the long-term health effects of paint “off gassing.” In Denmark, specialists in the field of paint industry have researched a neurological condition caused by long-term exposure to paint solvents - “painter’s dementia”. Furthermore, WHO considers children and elderly people being the most vulnerable to solvent vapours.

Considering health concerns related to paint industry, the issues of occupational safety and prevention of professional diseases in the paint industry have become urgent problems to be addressed by both national and international health organizations. The negative effects imposed by paint, when especially added to headaches, allergic reactions or heart stressing, are among the dangers threatening workforce health.

To ensure occupational safety and prevent professional diseases, employers are to develop and implement workforce safety programs, which, being properly managed will result in reduction of possible health reactions.

## II. Rights of the work force

Employees’ rights or labor rights are the legal rights of individuals, related to the labor relations established between employers and employees and obtained under employment law. In general, at the level of international supervision, labor laws primarily regulate workers’ pay, benefits, and safe working conditions. The critical component of labor regulation is protection of the collective bargaining powers.

The concept of labor rights protection was developed in the 19th century due to creation of labor unions following the industrialization. One of the prominent economists and philosophers, Karl Marx, argued socialism being the government of “workers”. Modern concept of labor rights is primarily focused on exploitation, mobile global flows, and decent workplace, decent working conditions and occupational safety. In 1919, the International Labour Organization, one of the agencies of the League of Nations, was established to protect employees’ rights.

*Essential labor rights are defined in the United Nations Declaration of Human Rights:*

*Article 23:* “Everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment; to equal pay for equal work; just and favorable remuneration ensuring for himself and his family an existence worthy of human dignity; to form and to join trade unions for the protection of his interests” (United Nations Declaration of Human Rights);

*Article 24:* “Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay” (United Nations Declaration of Human Rights).

The International Labour Organization has developed labor standards for workers identified in the Declaration of the Fundamental Principles and Rights at Work and the Convention on the Rights of the Child (CROC). In accordance with above-mentioned documents, labor core standards include the following: freedom of associations, the right to collective bargaining; prohibition of forced labor and child labor, and non-discrimination.

**a. Institutions for work force rights preservation**

Considering the urgency and importance of protection of labor rights and promotion of core principle of decent work worldwide, labor rights, labor debates and other labor – related issues are regulated by both national and global institutions. Thus, for instance, the international institutions regulating labor issues and occupational safety include the following: International Labor Organization, International Network for Economic, Social & Cultural Rights, National Labor Committee, World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), etc.

At the national level, the most influential organization in the field of labor rights and occupation safety is Ministry of Labor or Ministry of Health. To implement core principles of decent labor, the authorities are to develop health protection programs, national labor standards and coordinate and supervise consistency of labor practices to core principles and national labor programs.

**b. Health hazards and health issues in the paint industry**

There are two major types of paint - water-based paints or acrylic emulsions, and solvent-based paints. While high-quality water-based paint is the most sparing for human health and environment, the solvent-based paint is the potential hazard for human health and safety. Therefore, let us provide popular paints imposing significant risks to human health.

Painting Tech	Health Hazards	Precautions
Water – based paint	May contain preservatives	Don’t eat or drink, good hygiene at work with paint, avoidance of inhalation of pigment powder, choosing paint with the least toxic preservatives, if possible
Water emulsion	Usually contains ammonia causing eye, nose and throat irritations; also, may include preservatives	Good hygiene, avoidance of inhalation of pigment powder, choosing paint with the least toxic preservatives, if possible, usage of window exhaust fan
Watercolors	Moderately toxic for nose and throat, slightly toxic for eyes; however, may cause skin allergies, asthma	Don’t eat or drink, good hygiene at work with paint, avoidance of inhalation of pigment powder, choosing paint with the least toxic preservatives, if possible
Casein paints	Strong irritant for eyes and nose	Good hygiene at work with paint, avoidance of inhalation of pigment powder, choosing paint with the least toxic preservatives, if possible; wearing gloves and usage of eyewash fountain

Tempera	Highly toxic paint, contains hazards in preservatives and pigments; intoxication causes severe liver damage	Good hygiene; tetrachloroethane use is strictly forbidden
Latex paint	Slightly toxic; may contain glycols and mercury	Using paints with mercury preservatives is not recommended
Oil paints	Pigment poisoning, turpentine is absorbed through skin, which may cause irritations	Good hygiene; turpentine replacing with odorless mineral spirits; usage of window exhaust fan; wearing respirators and neoprene gloves; removing paint from hands with vegetable oil
Alkyd - Solvent-Based Paints	Very toxic; more toxic than oil paints.	Using powerful exhaust fan; wearing NIOSH-approved respirators and neoprene gloves;; eliminating ignition sources
Pastels	May cause sensitivity in asthmatics; also contain toxic pigments, increases the risk of dust inhalation; causes nerve damage	Avoiding lead chromate & other toxic pigments; tap drawing; wearing NIOSH-approved toxic dust respirator; switching to less dusty pastels; using powerful exhaust fans

Based on the information provided in the table, most paints contain toxic pigments and preservatives causing irritation to eyes, nose and throat. Some paints are highly toxic and may cause severe damages to human health.

The toxic pigments and solvents penetrate into human body through inhalations, skin and digestive system. The exposure to solvents may cause the following symptoms: irritations of the skin, eyes, nose, throat; headaches and nausea; irritation of nerve system; blood, liver and kidney diseases; carcinogenic effects.

The key risk group exposed to paints is professional painters. Due to long – term exposure to solvents, professional painters receive numerous diseases caused by paints. Thus, according to WHO health report, professional painters are under increased risk of cancer of up to 20% and increased risk of lung cancer up to 40%.

Considering health hazards, preventing negative consequences of long-term exposure to solvents has become the critical component of organization’s labor policies.

### III. Prevention program

The program is to be implemented in the organizations in the paint industry in order to promote occupational safety and protect health of professional painters. The program includes trainings educating professional painters on health issues regarding long-term exposure to solvents and informing employers about precautions during painting.

Roles and responsibilities include the following:

- The consultant is to develop the series of educational and practical trainings to inform professional painters about precautions practices and health hazards; the trainings should be systematized in the guide on working with paint and preventing negative consequences of exposure to solvents.
- The professional painters are to attend the trainings and integrate effective principles of work with paint. The employer is responsible for conducting trainings, developing practical guides and incorporating effective precaution measures.
- Program benefits include ensuring occupational safety, addressing health issues related to paint industry; winning employees’ loyalty and trust; integrating effective precaution measures; increasing work efficiency.
- The cost of the program includes consultant remuneration; expenses related to trainings organization and publishing practical guides; installment and purchase of precaution equipments (window exhaust fans; respirators and neoprene gloves); incorporating precaution measures into daily practices (usage of high quality paints).
- Trainings include practical seminars with consultants. The training course is to cover both theoretical and practical issues related to occupational safety and negative consequences related to long – term exposure to solvents. The trainings are to be systematized into practical guide. In addition, the trainings should be developed for both

employees and employers. From employers' perspective, ensuring occupational safety has become the critical to developing overall labor policies in the organizations.

#### References

- [1] Universal Declaration of Human Rights. (2012). OHCHR. Retrieved from: <http://www.ohchr.org/en/udhr/pages/language.aspx?langid=eng>
- [2] Core Labour Standards Handbook. (2006). *International Labor Organization*. Retrieved from: <http://www.adb.org/Documents/Handbooks/Core-Labor-Standards/default.asp>
- [3] Health & Safety in the Arts. *City of Tucson's Environmental Management Division*. Retrieved from: <http://www.tucsonaz.gov/arthazards/paint3.html>
- [4] Dryson, D. (2009). Chronic Organic Solvent Neurotoxicity: Diagnostic Criteria. New Zealand: *Occupational Safety and Health Service*.
- [5] Occupational Safety and Health Act 1984. (2005). Western Australia. Retrieved from: [http://industry.flexiblelearning.net.au/example\\_royal\\_perth/toolbox\\_601/shared/documents/OSH\\_Act\\_1984.pdf](http://industry.flexiblelearning.net.au/example_royal_perth/toolbox_601/shared/documents/OSH_Act_1984.pdf)