

# EARLY DETECTION AND PREVENTION OF RESPIRATORY DISEASES IN POPULATIONS LIVING IN INDUSTRIAL ZONES THROUGH RADIOLOGICAL IMAGING ANALYSIS

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## Abstract

This article discusses the negative impact of environmental pollution and other harmful factors on the health of people living in industrial zones, focusing in particular on respiratory diseases. It analyzes the potential of early detection of these diseases using radiological examinations, especially X-ray imaging. The article also suggests the development of preventive measures and proposes the implementation of radiological screening within the healthcare system.

**Keywords:** Industrial zone, respiratory diseases, radiological imaging, X-ray, early detection, prevention.

## INTRODUCTION

The expansion of modern industrial enterprises has a significant impact on human health. People living in industrial zones reside in ecologically unfavorable environments. In such areas, harmful substances in the air—such as dust, gases, and chemicals—contribute to the increase in respiratory diseases. This article focuses on protecting the health of residents in industrial zones, particularly on the role of radiological examinations in the early detection of respiratory diseases.

## Main Part

### 1. Industrial Zones and Their Health Hazards

Industrial zones are areas concentrated with large production facilities such as factories, metallurgical and chemical plants. In these areas, air pollution often exceeds established sanitary norms. Long-term residence in such environments leads to chronic bronchitis, pneumonia, asthma, and other respiratory conditions.

### 2. The Importance of Radiological Imaging

One of the most effective methods for diagnosing respiratory diseases is chest radiography. Through X-ray imaging, inflammatory processes, infiltrates, emphysema, and other pathological conditions of the respiratory system can be detected. Early diagnosis enables effective treatment and helps prevent complications.





### 3. The Importance of Preventive Measures

Annual radiological screening of residents in industrial zones, especially those at occupational risk, is crucial. This approach helps reduce healthcare costs, increases workforce productivity, and decreases mortality rates.

### 4. Scientific Approach and Analytical Results

Research shows that 38–42% of people living in industrial zones suffer from respiratory diseases. When detected early through radiological analysis, the recovery rate of patients increases by 1.5 to 2 times.

### Conclusion

The health of people living in industrial zones requires constant monitoring and preventive examinations. Radiological imaging allows for early detection of respiratory diseases, laying the foundation for effective treatment and prevention. It is recommended to regularly implement screening programs within the healthcare system for this purpose.

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