

Chemical and Health Risks of Swimming Pool Maintenance Workers [†]

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Abstract: Swimming pool maintenance workers are exposed to occupational hazards, as it involves the regular handling of toxic chemicals. These exposures can result in acute reactions or chronic complications. The present study, still in the design phase, aims to describe the chemical and biological exposure of workers of a swimming pool maintenance company and to verify its compliance with the safety standards in force. A quantitative questionnaire will identify the use of personal protective equipment, chemical agents, and handling procedures, particularly regarding the time and frequency of use.

Keywords: swimming pool maintenance; toxic volatile agents; reactive airway dysfunction syndrome

1. Introduction

Swimming pool maintenance workers are exposed to specific occupational hazards, as their work involves regular handling of toxic chemical agents, such as acids, alkalis, halogens, solvents, complexing agents, and sodium hypochlorite [1–3].

There is evidence that some of these workers do not use adequate protective equipment or have the necessary training to understand the health dangers of inappropriate protection [2–4]. This practice promotes sporadic or continuous inhalation of chlorine vapors and other volatile agents, and skin contact with acids and bases [1,2].

These exposures can result in acute reactions, such as eye irritation, upper respiratory tract inflammation, and dermatitis, to name a few examples, or chronic complications, such as dental corrosion or reactive airway dysfunction syndrome [5,6].

Additionally, acute, accidental exposures, following falls, spills, or even explosions, can cause burns and physical trauma of unpredictable severity [5].

We aim to describe the chemical and biological exposure of workers from a swimming pool maintenance company and verify compliance with current safety standards.

2. Materials and Methods

We intend to conduct a cross-sectional, descriptive study, in swimming pool maintenance workers, based in Portugal. Considering an expected prevalence of 65% for cough, eye irritation, or rash, as reported in the literature [1], a 95% confidence interval, and 85% power, we estimate that a minimum of 155 pool workers should be recruited for our results to achieve statistical significance. We will construct a non-random sample of pool workers, recruited by sending e-mail invitations to the commercial addresses of pool maintenance companies publicly listed, or through social networks and direct contact with workers.



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Data collection will be achieved by an online, anonymous, quantitative questionnaire. The present study is still in the project phase, pending study protocol approval.

The questionnaire will include closed and open-ended questions regarding usual work practices, sentences to specify agreement in a Likert-style scale and questions regarding sociodemographic data and work experience.

We intend to describe the use of individual protection equipment, the chemical agents used, and the procedures that involve their handling, particularly regarding the time and frequency of use. Following the participant's briefing on the study and collection of their informed consent, total study participation is expected to last no more than twenty minutes.

This research was submitted to the Ethics Committee of the University of Algarve, and all ethical and privacy considerations will be safeguarded, to guarantee the anonymity of the workers and minimize information biases.

3. Expected Results and Relevance

According to several authors, maintenance and cleaning workers often do not realize the health hazards of the products they use. In pool maintenance, workers are poorly trained, and employers keep occupational health procedures at the minimal legal level, which implies that safety data sheets will be available but not clearly presented to every worker [5,7]. Additional findings suggested that the conditions to which pool maintenance workers are exposed contribute to a higher prevalence of work-related respiratory and ocular symptoms compared with workers in other areas [1,2]. Thus, reporting on worker practices and knowledge can help in identifying gaps in training or assess the need for specific courses to reinforce proper workplace practices.

Assessing, even if by means of a cross-sectional survey, respiratory, dermatological, or ophthalmological complaints, could allow us to discuss the need for implementing more frequent medical examinations in workers exposed to health risks related to pool maintenance.

To the best of our knowledge, this will be the first study on this topic in Portuguese workers.

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Institutional Review Board Statement: The study will be conducted in accordance with the Declaration of Helsinki, approval by the Ethics Committee of the University of Algarve is pending.

Informed Consent Statement: Informed consent will be obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author due to privacy restrictions.

Conflicts of Interest: The authors declare no conflicts of interest.

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