The relationship of female workers to nanomaterial-related risks: How do requests for ergonomic intervention emerge?

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1. Introduction

Men and women's relationship to risks seems to be different: perceptions of risk may be linked to gender stereotypes but also to the different work activities carried out by men and women. In this presentation, two intervention requests are examined from the point of view of sex and gender and the relationship to an emerging risk, that of nanoparticles, whose health effects are poorly understood by workers.

2. Methods

The methodology is based on semi-structured interviews and activity observations following nanoparticle characterization measurements. The interviews performed focused on the male and female laboratory workers' perception of risks. The objective of the activity observations was to gain an understanding of the integration of new prevention practices and develop a prevention system for the future.

3. Results

In both the cases presented, it is the women who are exposed to the risks linked to nanoparticles. This is because of the work they carry out in the laboratory and their status. These are also the reasons leading to a request for intervention targeting the prevention of this type of risk. These female workers were not necessarily aware of the risks involved before the intervention. Let us remember that the general public and male and female workers are unfamiliar with the effects of nanoparticles on health. Awareness of the risk is only possible thanks to experts, even if the link between exposure and health effect is still difficult to establish.

In the first case, a female PhD student and a female post-doctoral student were required to perform an unplanned activity as part of their work. This involved cleaning a reactor to ensure the quality of samples. The students are part of a multidisciplinary physics and biology project involving two laboratories. The project aims to limit the adherence of bacteria to stainless steel using plasma processes that integrate silver particles (which act as bactericides) into a layer of organosilicon. The PhD student, who was pregnant, presented this cleaning activity (sandpapering the sides of the reactor to make it cleaner and improve the deposition conditions for the next operation) to her team. The team asked her to stop the operations in the laboratory where they worked on the machine. The measurements performed by the INRS lead to a change in the cleaning technique: instead of rubbing the walls of the reactor in dry conditions, they wet the sandpaper used and collected the dust using an ethanol imbibed cloth. This new cleaning procedure was presented with other recommendations (PPE: masks, gown, disposable gloves and management of nanowaste) in order to protect the workers' health. The perception of the risk by the women workers stemmed more from fear, while the men simply denied the risk.

The second case concerns a female laboratory technician who splashed a liquid product containing nanomaterials on her arm. A second woman working in the laboratory, in charge of cutting cardboard in order to perform quality tests, had asked the sales department to provide her with information about the contents of the new materials being used but had not received a reply. The company transforms starch into paper pulp and is geared towards innovation. Given that the company had not provided any information about the risks linked to these nanomaterials, the alert was given by the laboratory team leader, a man. He was worried about the female laboratory technicians' exposure to risks and his concern was fuelled by the fact that he had lost his own father to asbestos-related cancer. With the technicians putting a stop to the laboratory operations, the situation became one of a stalemate between the employees and the management. The objective of the intervention was to help the work collective design a prevention system.
based on the way work was organized and the risks as perceived by the company employees and, above all, the risks linked to the laboratory technicians’ activities.

4. Discussion

These results seem to indicate that when women are aware of a potential risk, they tend to take action in order to prevent it: wearing PPE in line with recommendations, applying safety procedures, requesting additional information, calling in the company doctor, and seeking knowledge outside the company. Women whose activity exposes them more to nanoparticles than men perceive the related risks and take action. Their greater exposure can be explained by a breakdown of work according to social roles. Ergonomics should therefore take into account the differences in men and women’s activities when analyzing intervention requests. This discipline should also strive to better know and recognize women’s activities when analyzing requests and to take this into account in the analysis of exposure related to women’s work. This will make it easier to understand risk management strategies according to sex and gender and to design prevention systems in line with women’s work.