

Occupational cancers: avoidable diseases engendering major costs for our societies

The primary cause of work-related mortality, occupational cancers cause high costs for workers, employers and health systems in all European countries. But it is the workers and their families who have to bear nearly all of these costs. The revision of the Carcinogens and Mutagens Directive (CMD), now relaunched, should help reduce the number of victims and the associated costs.

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Blue-collar workers pay a heavy price for being exposed to carcinogenic substances at work.
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Christian Cervantes battled with two cancers at once: cancer of the mouth and cancer of the pharynx. Tragically, he lost the battle at the age of just 64. He had worked in the glass industry for over 30 years, where he had been exposed to several carcinogenic substances: asbestos, polycyclic aromatic hydrocarbons (PAHs), refractory ceramic fibres, solvents. He knew nothing about the risks of these exposures for his health. After a tough legal battle waged by his family, the causal link between his multiple exposure to these carcinogenic substances at work and the development of his cancers was finally recognised by a tribunal in Lyon (France)¹.

This case is interesting from several different aspects. First of all, it is very much representative of what are known as "occupational cancers", diseases affecting blue-collar much more than white-collar, leading to what are called "social inequalities in health". Throughout Europe, blue-collar occupations are indeed hit much more by cancers than white-collar ones, and the risk of contracting cancer is to a large extent dependent on a person's position in a company².

These cancers are due to repeated exposure to hazardous substances without adequate protection throughout working life. In most cases, workers are not informed of the risks to which they are exposed, and the necessary measures for protecting them are not taken. The history of our production-driven societies and the quest for maximising profits shows that in certain cases this ignorance was deliberately fostered by industry leaders, as was the case with asbestos and vinyl

chloride monomer and still is the case for endocrine disruptors or glyphosate.

As shown by the example of Mr Cervantes, victims of occupational cancers have most often been exposed not just to one but to a whole cocktail of carcinogens. What makes the case of this glassworker stand out however is the fact that multiple exposure has for the first time been recognised by a court as being the cause of his occupational cancers.³ In all European countries, if and when a cancer is recognised as an occupational disease, it is generally linked to just one causal agent. Multiple exposures at work are however the rule. For instance, construction workers may be simultaneously exposed to crystalline silica, asbestos, diesel engine exhaust emissions, wood dust, PAHs and to UV radiation from the sun. If they want to have their lung cancer recognised as an occupational disease, only one of these exposures will be taken into account.

Invisible diseases

Cancers are multifactorial diseases and risk factors are numerous (lifestyle, genetic factors, environmental or occupational exposure, etc.). When a cancer suspected of being work-related occurs, it is therefore difficult to establish the link to working conditions. Cancer pathologies generally have no specific signature⁴ and there is no way of distinguishing for example between work-related bladder cancer and bladder cancer with a different cause. Moreover, occupational cancers often appear dozens of years after exposure

begins, typically when workers have retired. They rarely consider making the link to the work they used to perform, especially when they are unaware of the identity of or the risks associated with the agents to which they were exposed.

At the same time, doctors show little interest in the past careers of their cancer patients, rarely posing the question: "What job did you use to do?" The result is that occupational cancers are lumped together with all other cancers, not usually being identified

- 1.** Further reading: Marichalar P. (2018) Fighting for the factory, only to die for it. The exemplary fight of the former Givors glassworkers, *HesaMag*, 17, Brussels, ETUI.
- 2.** Mengeot M-A (2014) *Preventing work cancers. A workplace health priority*, Brussels, ETUI.
- 3.** Thébaud-Mony (2018) Ensuring recognition of the cancer outcome from multiple exposures to carcinogens at work, in Musu T. and Vogel L. *Cancer and work. Understanding occupational cancers and taking action to eliminate them*, Brussels, ETUI.
- 4.** Note that more than 95% of mesothelioma cases are attributable to asbestos exposure.

as work-related. This invisibility is even more the case among women, with the majority of epidemiological cancer studies referring to men. One persistent bias is that men are more affected than women because of the heavy and dangerous jobs they do in industry. However, it would seem that women are affected just as much, especially those working in certain occupations such as nursing (see box, p.16).

Estimates state that occupational cancers represent some 8% of all new cancer cases recorded each year (for both genders) in the European Union (EU) and that they are responsible for the deaths of more than 100,000 people each year. According to the World Health Organisation (WHO), they constitute the primary cause of work-related mortality in the EU, far more than work-related accidents which lead to some 5,000 deaths a year or 20 times less.⁵

In all European countries, we are confronted with the phenomena of non-reporting and non-recognition of occupational cancers as occupational diseases. In France for example, less than 2,000 cases of cancer are recognised as work-related each year, even though the authorities themselves estimate the annual number of work-related cancer cases to be between 14,000 and 30,000. This phenomenon also fosters the invisibility of such pathologies. There are indeed many obstacles in the way of reporting and recognising such cancers⁶. Apart from the already-mentioned difficulty of establishing the link between the cancer and the work performed by them, patients suspecting such a link often prefer to focus their efforts on fighting the disease rather than starting out on a long administrative procedure with no certain outcome for getting their cancer recognised as work-related (see box, p. 15). Many patients are even unaware that a compensation system exists and that they have access to it.

Throughout Europe, battles are being waged by workers and their families to get cancers recognised as occupational diseases and to obtain compensation. In certain cases, they manage to gain recognition through going to court. For Mr Cervantes and his family, the legal battle lasted 12 years, with the verdict in their favour pronounced 5 years after the death of this trade union member. The legal proceedings against the employer are by no means finished. In preparation of its lawsuit, the Cervantes family sent out a questionnaire to former workers of the glass-works. Among the 208 replies were 92 cases

of cancer. Convinced that their pathologies are linked to the bad working conditions and the lack of protection measures, a large number of colleagues are now taking legal action against their employer for "wilful misconduct", a provision enshrined in the French Social Security Code.

Staggering costs for victims

In the context of the talks on revising the CMD, the European Trade Union Institute (ETUI) commissioned a study to estimate the annual cost of occupational cancers in the EU-28.⁷ The researchers started by drawing up a list of carcinogens currently considered to be responsible for the majority of occupational cancer cases in Europe. They identified twenty-five carcinogenic agents. Apart from the carcinogens already mentioned above, the list included passive tobacco smoke, hexavalent chromium, cadmium, formaldehyde, benzene as well as agents such as night or shift work or work in the rubber industry. The researchers ended up with an estimate of the annual number of cancers attributable to exposure to these 25 agents: some 190,000 new cases for all 28 EU countries (between 125,000 and 275,000 cases a year). Lung, breast and bladder cancers were the most frequent work-related cancers. When looking at all new cases of cancers reported in Europe, the share of occupational cancers⁸ amounts to 8% (6-12%) for both genders, to 5% (3-7%) for women and to 10% (6-15%) for men. These estimates are close to the higher ones found in the literature and support studies establishing the overall proportion attributable to occupational cancers at 8% or higher. Another important finding of this study is that the attributable fraction for women is higher than that estimated in previous studies.

Based on the number of work-related cancer cases, the study concludes that the total cost of such cancers is between €270 and €610 billion a year for the EU-28 (corresponding to 1.8 - 4.1% of EU GDP).

These costs cover direct costs (medical treatment, transport, etc.), indirect costs (loss of productivity due to absence from work, etc.) and intangible (or human) costs for the victims (loss of quality of life for workers and their families). Looking at the break-down of these costs among the various players, we find that workers and their families bear the brunt (more than 98%), with a major share of the direct costs and all human costs borne

5. Takala J (2015) *Eliminating occupational cancer in Europe and globally*, Working Paper 2015.10, Brussels, ETUI.

6. Marchand A. (2018) What is stopping recognition of occupational cancers? in Musu T. and Vogel L., *Cancer and work. Understanding occupational cancers and taking action to eliminate them*, Brussels, ETUI.

7. Vencovsky D. *et al.* (2017) *The cost of occupational cancer in the EU-28*, Brussels, ETUI.

8. Epidemiologists use the concept of the "attributable fraction" to occupational cancers.

9. Benzene, vinyl chloride monomer and wood dust. A binding OEL also exists for asbestos, but in a specific directive (Directive 2009/148/EC).

10. Directive 2017/2398.

11. Update of an existing OEL.

by them. Even if excluding human costs, the direct and indirect costs remain substantial, with the ETUI study estimating them to be between €4 and €10 billion a year. Employers mainly bear the costs (some €4 billion a year) associated with the short- or long-term absence of the sick workers, as reflected in the costs of staff turnover, the training of replacements and insurance premiums. The state bears part of the medical costs, social insurance costs and the loss of human capital due to the premature deaths.

Commissioner Thyssen can be credited for re-launching the revision of the legislation stalled for the last 25 years.

The two systems of recognising occupational diseases

Two forms of recognition systems are used in the majority of European countries: the closed list system and the open list system. Under the first system, the patient's disease must figure in the list and the patient must meet the predefined criteria to gain recognition (for example, having been exposed to a known causal agent for a certain number of years). These criteria are often very restrictive, meaning that numerous claims have been rejected. The occupational cancers most often recognised in Europe are those associated with asbestos (some 80% of recognised cases). Under the second system, the victim has to prove the link between his pathology and his work. It goes without saying that this system is much more complicated and has a much lower success rate (just 1% of occupational cancers recognised in Germany and 2% in France).

Further reading

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Occupational cancers thus cause extremely high costs for workers, employers and social security systems in all EU Member States. Workers are the big losers, while employers come out best, pocketing the profits deriving from the workplace use of carcinogens, while outsourcing the largest slice of costs to the victims and national public health systems. One can thus well understand why they are little inclined to take effective prevention measures against occupational cancers.

To drastically reduce the number of cancers linked to bad working conditions, we urgently need the EU to come up with a proper strategy for fighting these diseases. This requires, inter alia, the updating and tightening of existing legislation and better enforcement of these rules in companies.

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Recent progress

Designed to protect workers against the risks associated with workplace exposure to carcinogens and mutagens, the CMD is a key weapon in the European legislative arsenal. Adopted in 1990, it organises prevention and defines a hierarchy of employer obligations. When unable to eliminate or replace carcinogens by less hazardous substances or processes, or to use closed systems, they are obliged to reduce exposure to carcinogens and mutagens to levels as low as technically possible.

The CMD sets down occupational exposure limit values (OELs) which are not to be exceeded. For the last 25 years, the CMD has remained unchanged, with just three carcinogens being assigned an OEL⁹. In 2016, at the instigation of a number of EU Member States and the European Trade Union Confederation (ETUC), the European Commission finally relaunched the revision of this Directive, putting forward proposals for OELs for further carcinogens. The stated target of Marianne Thyssen, the Social Affairs Commissioner within the Juncker Commission, was to have binding OELs adopted for 50 priority carcinogens before 2020. Supported by the ETUC, this target is based on the fact that 80% of occupational exposures to carcinogens are attributable to some fifty agents commonly present in workplaces.

A first batch of eleven new OELs was adopted in 2017. It covers¹⁰ carcinogens affecting a large number of workers such as hexavalent chromium or crystalline silica, two substances to which 1 and 5 million workers respectively are exposed in the EU. A second batch consisting of six OELs was recently adopted, although the European Commission only proposed five on publishing its second proposal in January 2017. The debates on this second batch focused on diesel engine exhaust emissions, a complex mixture of carcinogen substances to which more than 3 million workers are exposed in Europe. Although

left out of the second batch proposed by the Commission, diesel engine exhaust emissions have now been included into the scope of the CMD, what is more with a binding OEL. This turnaround was the result of a massive vote within the European Parliament in favour of these amendments and, in the subsequent negotiations with the Member States, of the support of certain Member States, including Germany and Austria, countries already possessing a national limit value.

A proposal for a third batch of five further carcinogens was put forward by the Commission in April 2018, despite the fact that the negotiations over the second batch had not yet been completed. There is still a chance that these new OELs could be adopted by the co-legislators (the European Parliament and Council) before the end of the Austrian EU Presidency in December 2018.

A fourth batch is currently under discussion within the Commission. In its present state, it refers to three carcinogens: nickel compounds, acrylonitrile and benzene¹¹. Given the time needed for the legislative process, these new OELs are unlikely to be adopted before the European elections in May 2019 and thus the end of the mandate of the Juncker Commission. With a total of 25 carcinogens with binding OELs at EU level, Commissioner Thyssen will not be able to meet her committed target for 2020. She will also leave behind her a number of unfinished building sites, including the extension of the scope of the CMD to reprotoxic substances and the adoption of an EU-level methodology for adopting OELs for carcinogens without thresholds. Nevertheless, she can be credited with relaunching the revision of the legislation stalled for the last 25 years and, we hope, with making it durable.

This is one of the necessary conditions for establishing a true cancer prevention culture in companies, for bringing down the number of occupational cancer victims and the substantial costs they entail for our whole society. ●

Breast cancer and work: overcoming the ignorance and denials

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The many associations of breast cancer victims work to modify relations between patients and the medical world. In France, nurse Sylvie Pioli has set up such an organisation, CycloSein. But there is something special about Sylvie's association: it aims to promote prevention through eliminating occupational risk factors. Its main preoccupation is to highlight the link between night work and breast cancer.

Sylvie herself worked for 30 years as a nurse in a hospital, often working nights. In December 2014, while under the shower, she felt a bump in her right breast. Being a nurse, she was able to see a doctor very quickly. Eight days later, she got the diagnosis: breast cancer. This meant surgery in early January 2015, 3 months of radiotherapy and 5 years of hormone therapy. Like many patients, she wondered how she could have contracted the disease. There was no specific risk factor able to explain her cancer. Speaking with the anaesthetist on the day of her surgery, she was told: "No need to look further. Breast cancer and night work go together." After having gone through the successive therapies, she has now started rebelling against the system. In 30 years, nobody had ever told her about the cancer risks associated with night work. Sylvie began to discuss the matter with others. She became a critical patient, not hesitating to question doctors on the limits of their knowledge. She became an avid reader of the scientific literature. One of the articles she found was about the CECILE* study, the results of which showed that the risk of breast cancer was 30% higher among women doing night work. This increased risk is marked among women having worked nights for more than four years, or among those whose work schedules

involve working at least three nights a week, i.e. frequent changes between day and night shifts.

I met Sylvie at a trade union training course devoted to the role of working conditions in the development of breast cancer. It quickly became clear that associations and trade unions need to learn a lot from each other if they want to develop effective prevention action.

In North America, the link between occupational exposure and breast cancer has been researched more systematically. With the epidemiology of occupational risks traditionally focused on cancers among men, a vicious circle has been established. A long-lived stereotype sees women less affected by occupational cancers. As a result, epidemiological studies of cancers often ignore female populations, and doctors tend not to ask questions about working conditions when diagnosing cancer in a woman. This systematic denial is boosted by occupational disease recognition systems under which it is very unlikely that a woman will manage to get her cancer recognised as being work-related. In North America in the 1970s, a protest movement developed among women with breast cancer, focusing on many aspects including the therapies, the dominating attitudes of male healthcare professionals towards women and their bodies, and the role of collective factors such as the massive production of carcinogens by industry. In the wake of this movement, the role of working conditions began to be explored. The research world only started posing relevant questions because this feminist movement had begun to influence the priorities of the scientific community.

A recent issue of the *New Solutions* journal provides an overview of the research undertaken between 2002 and 2017 in two complementary articles, one presenting a summary of the data from 142 publications, the other highlighting the need to transform the production of scientific research. One of the most widespread problems is that researchers rarely involve women workers when designing their projects: this was only the case in 3 of the 142 studies examined.

Though much work remains to be done, two findings are already evident: 1) we are now in a position to map specific occupational groups, showing the increased risks of breast cancer in certain jobs. 2) we already know a set of occupational exposures contributing to this situation: ionising radiation and chemicals found especially in solvents, pesticides, certain cosmetics, etc. In 2007, night shift work was identified by the International Agency for Research on Cancer as a probable carcinogen for humans (category 2A). Stress and long working hours are also suspected of increasing the risk of breast cancer. Moreover, the action of endocrine disruptors is not to be neglected.

There is a lot at stake. Accounting for more than 93,000 deaths in 2014, breast cancer is the primary cause of cancer mortality among women in the European Union, although very rare among men (around 1,000 deaths a year). In Europe, the number of new breast cancer cases diagnosed each year is rising, though mortality is on the decrease thanks to early detection and improved therapies. According to a study published last year by the European Trade Union Institute, effective elimination of the occupational factors could prevent at least 35,000 cases of breast cancer a year in Europe.

However, nearly all breast cancer campaigns continue to ignore the role played by working conditions.

*This epidemiological study, carried out in two *départements* in Western France, compared the careers of some 1300 women who developed breast cancer between 2005 and 2007 with those of 1300 other women.

Further reading

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