



# FEDRIS

AGENCE FÉDÉRALE DES RISQUES PROFESSIONNELS



## Avis du Conseil scientifique

Sclérose systémique

Exposition aux solvants et au  
formaldéhyde

19-10-2023



## Sclérose systémique liée à l'exposition aux solvants et au formaldéhyde

Résumé de l'avis du Conseil scientifique de Fedris du 19 octobre 2023

**Le Conseil scientifique, sur base de l'avis de la Commission médicale « agents chimiques et toxiques » constate qu'il n'existe actuellement pas suffisamment de preuves scientifiques d'un risque accru de développer une sclérose systémique chez les travailleurs exposés aux solvants et par conséquent, d'éléments permettant de démontrer l'existence d'un lien causal prépondérant. Il n'est pas non plus possible d'identifier les solvants concernés et de définir des critères d'exposition. Les conditions nécessaires pour inscrire la sclérose systémique provoquée par l'exposition aux solvants et au formaldéhyde dans le système liste des maladies professionnelles ne sont donc pas rencontrées.**

La sclérose systémique est une maladie rare du tissu conjonctif caractérisée par une hyperactivité et un remodelage vasculaire, une activation des fibroblastes et une synthèse de la matrice-extracellulaire. La prévalence de cette maladie a été estimée entre 7,2 et 33,9 pour 100 000 individus en Europe.

En 2023, le Prof. T Nawrot a réalisé une étude de la littérature épidémiologique de ces 20 dernières années (2001-2022) : « Solvent and formaldehyde exposure and systemic sclerosis, a systematic overview of the current evidence ».

Sur base de cette étude, la Commission médicale « agents chimiques et toxiques » a constaté que, dans l'ensemble, les études scientifiques montrent des associations significatives entre la sclérose systémique et l'expositions aux solvants. Cependant, il est impossible d'attribuer cette association à des solvants spécifiques ou d'établir des relations doses/réponses. En effet, dans la majorité des études analysées, l'exposition est basée sur la description du poste de travail, le titre du poste ou les expositions déclarées par le biais d'un questionnaire ; l'information détaillée sur la durée et l'intensité de l'exposition ou le solvant incriminé manque.

La commission conclut qu'il n'y a pas encore, à ce jour, assez d'éléments dans littérature pour démontrer un lien de causalité clair, établir un seuil de doublement du risque et fixer des critères d'exposition pour les différents solvants organiques et/ou le formaldéhyde.

Le Conseil scientifique a approuvé l'étude réalisée par le Prof. Nawrot et les conclusions de la commission « agents chimiques et toxiques »

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- Note des rédacteurs : L'étude suivante dont les résultats ont été rendus publiques en 2023 n'a pas été intégrée à l'étude, mais elle a été présentée en séance au Conseil scientifique qui a donc pu l'analyser avant de rendre son avis : Muntyanu A., Milan R., Rahme E., Baron M., Netchiporouk E. Organic solvent exposure and systemic sclerosis: A retrospective cohort study based on the Canadian Scleroderma Research Group registry. *J Am Acad Dermatol.* 2024 Mar;90(3):605-607. doi: 10.1016/j.jaad.2023.04.062. Epub 2023 May 13.
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# **Solvent and formaldehyde exposure and systemic sclerosis, a systematic overview of the current evidence**

## **Summary**

Systemic sclerosis is a rare autoimmune disease with a multifactorial etiology. This document provides a systematic overview of the epidemiological evidence during the last 20 years, between systemic sclerosis and the possible occupational aetiologies due to solvent exposure.

In total we retrieved 10 studies of which 1 cohort, 7 case-controls and 2 descriptive studies of exposure prevalence in diseased populations. Seven of the eight analytical studies (1 cohort and 7 case-control studies) published in the last 20 years showed significant associations, with ORs ranging from 1.03 to 3.2. The most recent meta-analysis was published in 2016 and included 13 case-control studies and comprised 2107 patients. The combined Odds was OR 2.00 (95% CI 1.32–3.02;  $p = 0.001$ ). Based on the reported literature and assuming a causal relationship we can estimate that in patients with SSc and proven occupational exposure to solvents, 65% to 50% (Attributable fraction of exposed) of SSc could be attributed to occupational exposure to solvents. However, to date the literature is not specific enough to establish dose-response relationships for different organic solvents and or formaldehyde as the majority of studies exposure is based on job description, job title or self-reported exposures via questionnaire, but not on actual dose-response associations in which exposure took into account the duration or intensity (with exception of 1 study for styrene).

Overall, there is consistency in the literature regarding the association between solvent exposure and scleroderma. However, is impossible to address this to specific solvents nor to provide a threshold for a doubling of the risk. While there is some consistency in the literature, the lack of comprehensive knowledge and a clear dose-response relationship limits our ability to establish causality.

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