

# Exposure to paint, varnish, other solvents linked to increased risk of multiple sclerosis

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Demyelination by MS. The CD68 colored tissue shows several macrophages in the area of the lesion. Original scale 1:100. Credit: [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/) Marvin 101/Wikipedia

People who have been exposed to paint, varnish and other solvents and who also carry genes that make them more susceptible to developing multiple sclerosis (MS) may be at much greater risk of developing the

disease than people who have only the exposure to solvents or the MS genes, according to a study published in the July 3, 2018, online issue of *Neurology*, the medical journal of the American Academy of Neurology.

People with exposure to paint or other solvents are 50 percent more likely to develop MS than people with no exposure. People with exposure to solvents who also carry the [genes](#) that make them more susceptible to MS are nearly seven times as likely to develop the disease as people with no solvent exposure who do not carry the MS genes.

For people who have been smokers, the risk is even greater. Those who have been smokers with [solvent](#) exposure and the MS genes are 30 times more likely to develop MS than those who have never smoked or been exposed to solvents and who do not have the genetic risk factors.

"These are significant interactions where the factors have a much greater effect in combination than they do on their own," said study author Anna Hedström, MD, Ph.D., of the Karolinska Institutet in Stockholm, Sweden. "More research is needed to understand how these factors interact to create this risk. It's possible that exposure to solvents and smoking may both involve lung inflammation and irritation that leads to an immune reaction in the lungs."

For the study, researchers identified 2,042 people who had recently been diagnosed with MS in Sweden and matched them with 2,947 people of the same age and sex. Blood tests were used to determine whether the participants had two human leukocyte antigen gene variants, one of which makes people more likely to develop MS and the other reduces the risk of MS. The participants were also asked whether they had been exposed to [organic solvents](#), painting products or varnish and whether they had ever been a smoker.

In the group with neither of the MS genes and no smoking or exposure to

solvents, there were 139 people with MS and 525 people without the disease. In the group with the MS genes and exposure to solvents but no smoking, there were 34 people with MS and 19 people without the disease. In the group with MS genes and exposure to solvents and smoking, there were 40 people with MS and five people without the disease.

The researchers determined that the MS genes and exposure to solvents combined were responsible for an estimated 60 percent of the risk of developing MS.

"How this cocktail of MS genes, organic solvents and smoking contributes so significantly to MS risk warrants investigation," said Gabriele C. DeLuca, MD, DPhil, of the University of Oxford in the United Kingdom and a member of the American Academy of Neurology, in an accompanying editorial. "In the meantime, avoiding cigarette smoke and unnecessary exposure to organic solvents, particularly in combination with each other, would seem reasonable lifestyle changes people can take to reduce the risk of MS, especially in [people](#) with a family history of the [disease](#)."

One limitation of the study was that participants were asked to remember any [exposure](#) they had to solvents, so it is possible that they may not have remembered correctly.

Provided by American Academy of Neurology

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