



UNDERSTANDING MULTIPLE CHEMICAL SENSITIVITY (MCS)





WHAT IS MULTIPLE CHEMICAL SENSITIVITY (MCS)

Multiple Chemical Sensitivity (MCS)

MCS is an acquired chronic condition in which individuals experience adverse reactions to low-level, common chemical exposures previously tolerated and tolerated by others (Steinemann, 2018).

Common Triggers

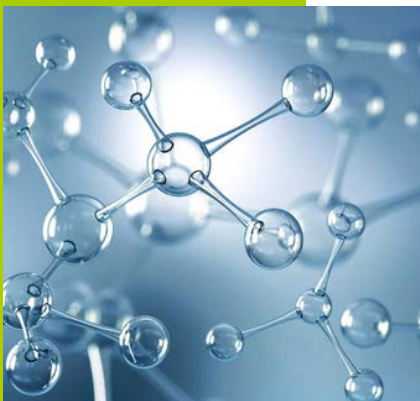
Include volatile organic compounds (VOCs) such as limonene, geraniol, eugenol, linalool, citral, cinnamal, citronellol, lylal and others (Salonen et al., 2024) found in perfumes, colognes, fragrances, scented and other products such as cleaning agents, personal and laundry products, air fresheners, pesticides, smoke, and building materials (Miller & Ashford, 2000; Jinn et al., 2007; Caress & Steinemann, 2009; Masri et al., 2021)

SENSITIZATION AND RECEPTORS



Sensitization Process

People with MCS often become sensitized to chemicals due to an unusual high dose repeated or prolonged exposure to chemicals. The process of sensitization means that their bodies react more intensely to even low levels of certain chemicals (Davidoff & Keyl, 1996; Hempel et al., 2023).



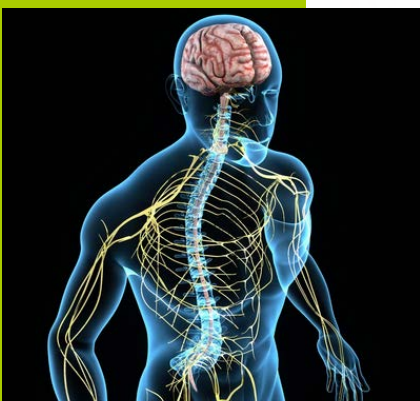
Sensing chemicals

Multiple studies of MCS have repeatedly found a heightened sensitivity in chemical-sensing receptors in individuals with MCS, suggesting they can detect chemicals at lower levels than the unaffected population (Meggs, 1993; Bell et al., 1996; De Luca et al., 2021).



Receptor sensitization

Means that these receptors can detect chemicals at lower levels and/or respond more strongly with a range of physical symptoms (Doty et al., 1988).



Receptor location

Found in both the central nervous system (brain) and peripheral nerves, especially in the respiratory system (Meggs et al., 1996).



Receptor sensitization effects:

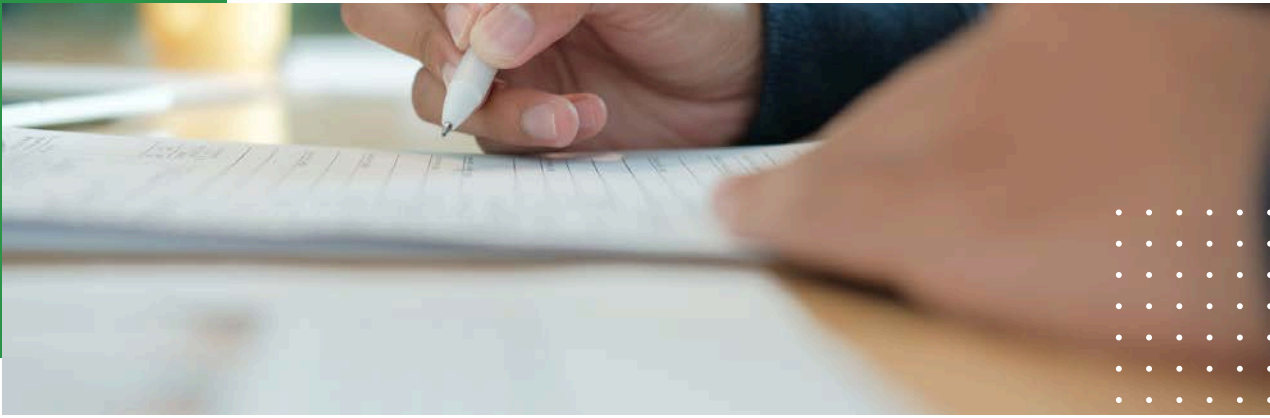
Sensitization can lead to a range of physical symptoms in response to exposures to low levels of chemicals that most other people may not even notice

Symptoms of MCS

- **Respiratory:** Wheezing, shortness of breath, coughing, congestion
 - **Neurological:** Headaches, dizziness, difficulty concentrating, brain fog, fatigue.
 - **Skin and Eyes:** Rashes, itching, watery or burning eyes.
 - **Digestive Issues:** Nausea, stomach discomfort (Gibson et al., 2003).
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Who is Affected?

- **Prevalence:** Over 1.13 million Canadians have a diagnosis (1 in 34 Canadians), 72% of which are women and 50% are over the age of 55 (Statistics Canada, 2020; CCHS).
- **Vulnerable Groups:** Those with asthma (Zock et al., 2006, Wang et al. 2019), contact dermatitis (Nardelli et al., 2009; Polanska et al., 2010), autism (Marco et al., 2011; Steinemann, 2019; Xu et al., 2020), migraines, allergies, autoimmune disorders, and other chronic illnesses may be more susceptible (Kreutzer et al., 1999).



WHY IS MCS IMPORTANT?

- **Health Impact:** MCS can severely impact quality of life, and lead to social isolation, job loss, and housing challenges (Gibson et al., 2003; Steinemann, 2018; Molot et al., 2023).
- **Accessibility Issue:** Scented environments and toxic exposures in public spaces, workplaces, and health-care settings make access difficult for individuals with MCS, prohibiting their access to the most fundamental needs (Caress & Steinemann, 2004).

SOLUTIONS AND ACCOMMODATIONS

- **Scent-Free Policies:** Implement fragrance-free policies in workplaces, schools, and health-care facilities to improve accessibility (Miller, 2000; Flegel and Martin, 2015; Brilmyer and Apolloni, 2017; Steinemann, 2019).
- **Education and Awareness:** Increase awareness of MCS and the impact of sensitization to foster supportive environments and initiate policy change (Gibson et al., 2003; Imai et al., 2008; Gibson, 2016; Seguel et al., 2016; Briones-Vozmediano & Espinar-Ruiz, 2021; Paterson et al., 2021).
- **Least-Toxic Products:** Use fragrance-free, non-toxic cleaning and personal care products with certified Eco Logos (Steinemann, 2017).



DID YOU KNOW?

MCS is recognized as a disability protected under the Human Rights Act (CHRC, 2007), the Canadian Human Rights Commission guides federally regulated employers and service providers on accommodation measures. Human Rights Commissions across Canada favour removal of barriers for inclusion of disability.

TAKE ACTION

- Support fragrance-free policies.
- Encourage use of low-toxicity products.
- Raise awareness about MCS and sensitization in your community (Smith et al., 2024).

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