Mast Cell Action

MCAS and Environmental Pollution - The Toxic Truth

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Disclaimer

The information in this presentation is intended for information and educational purposes only.

It is not medical advice.

You should always consult your doctor about your own particular conditions, and ensure that you do you own research before implementing any changes.

I am not medically qualified, and this information is not a substitute for medical advice, or diagnosis.

Understanding toxin exposure is just one factor that can affect MCAS, and you should work with a qualified practitioner to support you in detoxing, if you feel this is relevant to you.

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Today's Session

Many of us know that our MCAS can be triggered by exposure to artificial chemicals and other environmental substances.

Today we are going to examine
- What toxins are
- How are we exposed to toxins?
- How do toxins affect health generally?
- What is the evidence for how toxins affect mast cells?

- Warning!
- Some of the topics covered today might seem worrying or upsetting.
- Remember - Knowledge is power!

- We can't make informed decisions if we don't have the right information.

- Don't worry unduly about today's session – but use the information to empower yourself to make informed choices from now on about your environment and your health and to help you to identify possible triggers.

Environmental Toxins and Toxicants

- Toxins - Biologically produced by animals and plants
- Toxicants - Artificially produced chemical products
- Most people use the word ‘toxins’ interchangeably for both

- We ingest and absorb toxins and toxicants from the world around us every day

- Substances that are ‘foreign to the body’ or of no use to the body, and when they build up in the body, can have a huge impact on health

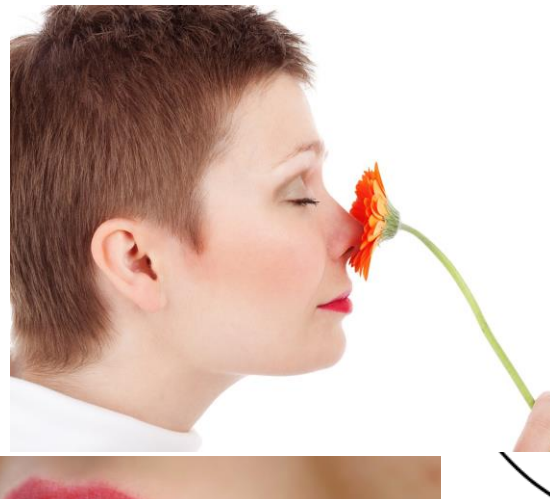
- Internal toxins – products of metabolism, hormones, histamine, neurotransmitters, inflammation by-products - waste products from our bodily functions every day that have to be eliminated.

- ALSO

- Anything we eat, put on our skin or breathe up our nose that we can’t use – considered by the body to be a ‘toxin’ and needs removal

How Are We Exposed?

- Skin - 70% of what we put on our skin is absorbed into the blood stream
- Inhaled - What we breathe up our nose – any smell – binds to receptors and inhaled straight into limbic brain
- Eat – absorbed through the gut lining, into the enteric nervous system and blood stream
- Drink – contaminants in drinks and in water



Types of Toxins

- According to CHE Collaborative on Health and the Environment - more than 82,000 chemicals have been developed, distributed, and discarded into the environment over the past fifty years. Only about 200 are fully tested for toxic effects in humans or animals.

- Testing in Isolation
- Testing in time-limited fashion

- Environmental Working Group - women use an average of **12 products a day**, containing 168 different chemicals every day.

- https://www.ewg.org/the-toxic-twelve-chemicals-and-contaminants-in-cosmetics

Image by Yerson Retamal from Pixabay

Types of Toxins

These chemicals are found in.....

- Furniture and DIY products
- Perfumes and fragrance
- Cleaning products
- Toiletries and makeup
- Plastics
- Pesticides
- Tap Water
- Mould
- Cigarette smoke
- Vapes

Image by 4924546 from Pixabay

Indoor Air Quality

Research suggests that indoor air is between 2 and 5 times more toxic than outside air

•According to WHO exposure to indoor air pollutants can lead to a wide range of health problems, ranging from eye conditions to respiratory illnesses and cancer.

•According to the Air Quality Expert Group UK (a department of DEFRA) most enclosed spaces have a wide range of indoor emissions including –

•from buildings materials, furnishings
•the use of combustion appliances such as gas and solid fuel cookers, boilers and stoves,
• the use of solvent-containing products, and
•the use of consumer products (e.g. cleaning and personal care products).

•The products we buy are constantly 'off-gassing' – often missed as a trigger

Image by StockSnap from Pixabay

Furniture and Paint

Have you ever bought new furniture, sofas, chest of drawers, carpets, cars etc, and noticed a ‘new’ smell?

- Flame retardants
- Stain repellents
- Anti-fungals
- Varnishes
- Chemicals like styrene and 4-phenylcyclohexane (4-PC) in the latex backing of carpets
- Glues and adhesives used in the lamination and manufacturing process
- Solvents like trichloroethylene, chloroform and formaldehyde.

It can take between 6 months and 5 years for these chemicals in new furniture to off gas

VOCs can trigger acute symptoms, like dizziness, headache, nausea, irritation to eyes and nose

Longer-term exposure to VOCs can affect reproductive health, endocrine function, nervous system function

A study published in March 2024 found Organophosphate Flame Retardants from foam and plastics in furniture may play a role in the development of neurological disorders like multiple sclerosis.

Image by Brigitte Werner from Pixabay

Perfumes/Fragrance

https://pubmed.ncbi.nlm.nih.gov/9577937/

https://link.springer.com/article/10.1007/s11869-018-0606-0

Researchers have found numerous chemicals in indoor air fresheners, sprays, plug-ins and solid fresheners, which are associated with toxic effects.

- Volatile organic compounds (VOCs) such as formaldehyde, benzene, toluene, ethylbenzene and xylenes — some of which are associated with different types of cancer in high doses. Formaldehyde in particular is a recognised carcinogen. They can also cause neurotoxicity, affecting the nervous system when breathed in.
- Phthalates are endocrine disruptors which mimic or disrupt the body's own hormones.
- Some chemicals in air fresheners are sensitizers that can cause allergies.
- They can also trigger asthma, wheezing, headaches, and contact dermatitis.
- Some compounds in fragrance are neurotoxic – damage the nervous system
- Essential Oils – also emit VOCs. One study 'All (tested) essential oils emitted one or more potentially hazardous VOCs, such as acetaldehyde, acetone, and ethanol. Toluene was also found in 50% of essential oils.' (https://link.springer.com/article/10.1007/s11869-018-0606-0)

VOC levels are particularly high when multiple products being used at the same time –eg air fresheners, cleaning chemicals and perfumes

According to recent research, 'synthetic musk' used in fragranced products has been found in human breast milk, body fat, blood, and umbilical cords. Studies show that these compounds can disrupt cell functioning and hormone systems.

Image by Monika from Pixabay

Cleaning Products

- Environmental Working Group Website
- **2-Butoxyethanol** hazardous air pollutant, butoxyethanol is demonstrated to reduce fertility, as well as cause low birth weight, toxic liver metabolites, asthma and allergies.
- **Perchloroethylene – dry cleaning and upholstery cleaning – PERC -** classified as carcinogenic. It has been linked to the development of liver and kidney tumours. It may also cause increased risk of Parkinson's disease.
- **1,4-Dioxane** contaminant widely found in many cleaning products like bleach and is a suspected human carcinogen,
- **Ammonia** in many cleaning products, causes asthma, bronchitis, skin irritation, immune and respiratory toxin,
- **Formaldehyde** a known human carcinogen
- **Triclosan** – antibacterial cleaning products –endocrine disruptor and has been found to interfere with human's thyroid hormone metabolism, increase allergies, asthma and eczema in children

Image by Dmitriy from Pixabay

Toiletries

- **According to the Environmental Working Group (DEFRA)**
- **Parabens** are used as preservatives in a wide variety of everyday products - Moisturizers, face and skin cleaners, sunscreens, deodorants, shampoo, conditioner, shaving gels, toothpastes, makeup and many other products.
- They are absorbed into the body through the skin,
- Adolescent girls who wear makeup every day had 20 times the levels of propylparaben in their urine compared to those who never or rarely wear makeup (Berger 2018)
- Linked to endocrine disruption, cancer, skin irritation, immune dysregulation

- **Aluminium** – deodorants, aluminium cooking pans, tin foil – causes damage **in the** brain, liver, and kidney. Studies have linked it to development of Parkinson's disease, Alzheimer's disease, autism spectrum disorder, multiple sclerosis and possibly breast cancer.

- **Glycols** alcohol used in toiletries – classified by the Environmental Working Group as being potentially an allergen and immunotoxicant

- **Phthalates** – cleaning and toiletries – fragrance - cancer, hormone disruption, birth defects, respiratory disease, chemical burns to eyes and skin. Studies show activate mast cells in airways and skin

- **Isothiazolinones** found in toiletries, cleaning products and paints. Causes sensitisation, allergic reactions, suspected immunotoxicity, dermatitis, asthma

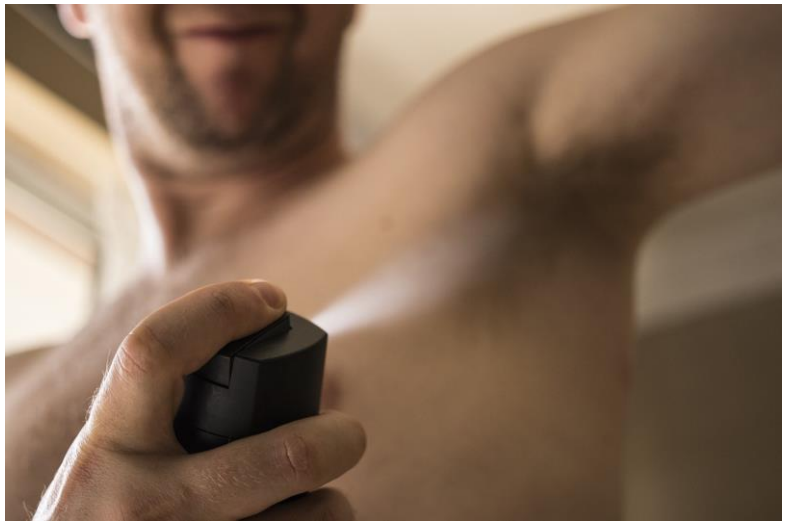


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Image by Nika Akin from Pixabay

Plastics

- **We eat plastic**
- Plastics in food manufacturing processes, food packaging and cookware and food storage containers. The additives in the plastics can leach out into the food and we ingest them with the food.

- **We drink plastic**
- 90% of bottled water has been found to contain microplastics, which we then ingest. Tap water can also contain chemicals that have leached into the ground water.

- **We breathe plastic**
- Over time, chemicals in plastics like BPA and Phthalates leach out of plastic products and become part of the house dust that we breathe every day.

- Research shows that we are consuming the equivalent of one credit card sized amount of microplastic per week

- Research is now showing that microplastic particles are being found in placentas and inside newborn babies.

- Studies in mice show that ingestion of microplastics damages the gut microbiome and triggers inflammation.

Image by Hans from Pixabay

Plastics

- **Plastics contain Endocrine Disrupting Chemicals EDCs**

- According to a joint report into EDC's by the Endocrine Society and International Pollutants Elimination Network
- 'Endocrine Disrupting Chemicals are chemicals that disturb the body's hormone systems and can cause cancer, diabetes, reproductive disorders, and neurological impairments of developing foetuses and children.'

- Plastic containing EDCs is used extensively in packaging, construction, flooring, food production and food packaging, cookware, health care, children's toys, leisure goods, furniture, home electronics, textiles, automobiles and cosmetics.

- EDC exposure is a universal problem. Testing of human samples consistently shows nearly all people have EDCs in their bodies.

- **Some of these chemicals include BPA, PVC, and Phthalates**

- According to a Harvard study BPA leaches from plastic water bottles and is consumed
- Exposure to BPA, has been shown to interfere with reproductive development in animals and has been linked with cardiovascular disease and diabetes in humans.
- They are also linked to issues with neurological development in children, obesity, reproductive health issues, and some cancers.

https://news.harvard.edu/gazette/story/2009/05/chemical-leaches-from-plastic-drinking-bottles-into-people/

Image by 🌸♡💙♡🌸 Julita 🌸♡💙♡🌸 from Pixabay

PFAS

(Per- and Polyfluoroalkyl Substances)
Discovered in 1930s, used widely since 1950s

PFAS are a group of synthetic chemicals used in a wide variety of common products, eg linings of fast-food boxes and non-stick cookware, stain-proofing in furniture, batteries, fire-fighting foams and also found in many pesticides.

Because they break down very slowly, PFAS are commonly called “forever chemicals.” They are part of the chemicals known as POPs – Persistent Organic Pollutants.

A report from the Royal Society of Chemistry (RSC) on PFAS chemicals in UK water courses – found 1/3 were contaminated.

PFAS have been linked to a range of serious adverse health conditions including testicular cancer, thyroid disease, increased cholesterol levels, liver damage and fertility issues, as well as damaging the development of unborn children.

Researchers at The University of Texas at El Paso - nanoplastics and per- and polyfluoroalkyl substances (PFAS) disrupt biomolecular structure and function, and can alter proteins found in human breast milk and infant formulas—potentially causing developmental issues downstream.
[Nanoplastics and 'forever chemicals' shown to disrupt molecular structures and functionality (phys.org)]

Image by Rudy and Peter Skitterians from Pixabay

Pesticides and Fertilisers

According to WHO Pesticides are “intrinsically toxic”.

If we are not eating organic foods, we are ingesting these pesticides and organophosphates in the food we eat

- Disrupt endocrine function and hormones
- Linked to cancers, asthma, childhood leukaemia and Parkinson’s disease
- Research into Roundup – Glyphosate – found statistically significant links to certain cancers, such as non-Hodgkin’s lymphoma.
- Organophosphate pesticides 2018 meta-review found “compelling evidence” that prenatal exposure leads to increased risk of neurodevelopmental disorders and cognitive and behavioural deficits.
- They can accumulate in the body.
- Some people have genetic blocks on their detox pathways, known as SNPs, which prevent certain substances from being eliminated effectively through the liver.

Image by Erich Westendarp from Pixabay

Pesticides and Fertilisers

According to this report by Environment Department's advisory committee on pesticide residues (PRiF) 2022

25 pesticides which contain so-called "forever chemicals“ were found in more than half of the tested food and drinks available in the UK.

PFA chemicals, toxins which take centuries to break down in the environment, were found in more than 3,300 samples tested by the UK government in 2022.

As PFAs can accumulate in living organisms and have been linked to serious **health** conditions.

Out of all the items tested, strawberries were found to be the worst affected as 95% of the 120 tested samples contained PFAs.

Image by Erich Westendarp from Pixabay

https://news.sky.com/story/forever-chemicals-found-in-more-than-half-of-food-and-drink-samples-testing-shows-13111032 UK 2022

Mould

Research is increasingly showing that exposure to mould is major factor in the development of chronic illness for many people.

Mould Illness or CIRS – Chronic Inflammatory Response Syndrome

Mould toxins have long-term effects on the immune system function, compromising the ability of the immune system to fight infection.

Mould exposure can be a precursor to the development of post-viral disorders, Fibromyalgia, MCAS and MCS.

Some practitioners suspect a link between mould and fibromyalgia and ME, as mould exposure can trigger widespread inflammation and neurological toxicity.

Similarly, many people with MCAS find that mould toxicity is a driving factor in their symptoms.

Image by Stefan Schweihofer from Pixabay

Smoking

- Cigarettes release over 5,000 different chemicals when they burn and many of these chemicals are poisonous.

•At least 70 chemicals in tobacco smoke cause cancer.

•Every 15 cigarettes smoked causes 1 gene mutation

• The toxins in cigarettes have to be eliminated via the liver, causing a strain on the liver

•Toxins in Cigarettes activate white blood cells and cause inflammation (2016 Federation of American Societies for Experimental Biology)

Inside Each Cigarette –

•1,3-Butadiene found in rubber
•Arsenic is a poison
•Benzene is an industrial solvent, made from crude oil
•Carbon Monoxide
•Beryllium is used in nuclear reactors
•Cadmium is used in batteries
•Chromium is used to manufacture dye, paint and car alloys
•Formaldehyde
•Polonium-21 is a highly radioactive element

•Source- Cancer Research UK

Image by Alexa from Pixabay

Vaping

According to the American Lung Association

Vape smoke contains

•Nicotine– a highly addictive substance that negatively affects adolescent brain development
•Propylene Glycol – used to make things like antifreeze and paint solvent
•Carcinogens- chemicals known to cause cancer, including acetaldehyde and formaldehyde
•Acrolein – a herbicide primarily used to kill weeds, can cause irreversible lung damage
•Diacetyl – a chemical linked to a lung disease called bronchiolitis obliterans aka 'popcorn lung'
•Diethylene glycol – a toxic chemical used in antifreeze that is linked to lung disease
•Heavy metals such as nickel, tin, lead
•Cadmium – a toxic metal found in traditional cigarettes that causes breathing problems and disease
•Benzene – a Volatile Organic Compound found in car exhaust
•Ultrafine particles that can be inhaled deep into the lungs

Studies show –
Linked to increased risk of arthritis
Inflammation in the gut
Inflammation in the lungs
Depression
Systemic inflammation

Image by Lindsay Fox from Pixabay

Heavy Metals

- Mercury
- Lead
- Arsenic
- Cadmium
- Aluminium
- Nickel

- Studies have linked Aluminium to development of Parkinson's disease, Alzheimer's disease, autism spectrum disorder, multiple sclerosis and possibly breast cancer.

•Some symptoms of chronic, low-level exposure, or one-off high exposure can include:
•Chronic Fatigue
•Autoimmunity
•Brain Fog/Cognitive issues/Alzheimer's
•Neurological issues
•Skin issues
•Mood disorders/depression
•Insomnia
•Digestive issues
•Pain

Sources of Aluminium

Antiperspirants
Toiletries
Takeaway packaging
Tinfoil
Cooking utensils
Baking trays
Saucepans
Food additives
Tap water

https://draxe.com/health/heavy-metal-detox/
https://www.medicalnewstoday.com/articles/327485#Non-food-products-top-source-of-exposure
https://pubmed.ncbi.nlm.nih.gov/21157018/

So, Why Does This Matter?

- As we have seen, these studies into these chemicals are finding that they affect our health.

- The National Institute of Environmental Health Sciences points to research that shows connections between exposure to environmental toxins and

- Asthma
- Autism
- Autoimmune Diseases
- Breast Cancer
- Inflammation
- Kidney Disease
- Lung Disease
- Obesity
- Parkinson's Disease
- Reproductive Health issues

- https://www.niehs.nih.gov/health/topics/conditions

Image by Mark Mook from Pixabay

Who is Most Affected?

- Many people can eliminate toxins effectively, but for many people, this relentless daily toxic soup can cause problems.

- Some people need to pay more attention to the toxins we expose ourselves to because they provoke inflammation in our bodies....

- People who are sensitive/allergic
- People with immune systems that are already struggling – autoimmune
- People whose inflammation levels are already high – toxins provoke more inflammation. Inflammation by-products are also eliminated via the liver, so it's already too busy.
- People who are under stress – cortisol and adrenaline interferer with detox processes and put additional strain on the liver
- Anyone with any underlying health condition – the organs and body are already working hard
- Anyone who is depleted of the nutrients that the liver needs to detox effectively – underweight, malnourished, poor diet, low veg intake
- People on medications and prescription drugs – these need to be eliminated by the same pathways, so our liver is already busy and can't eliminate 'extra' toxins.
- Some people have blockages on their genetic detox pathways – SNPs – which stops them from detoxing effectively, and substances can build up.
- Smaller body size = more affected. Women and children.
- Studies show that levels of toxic chemicals are often twice as high in pets

Toxin Exposure and Gut Microbiome

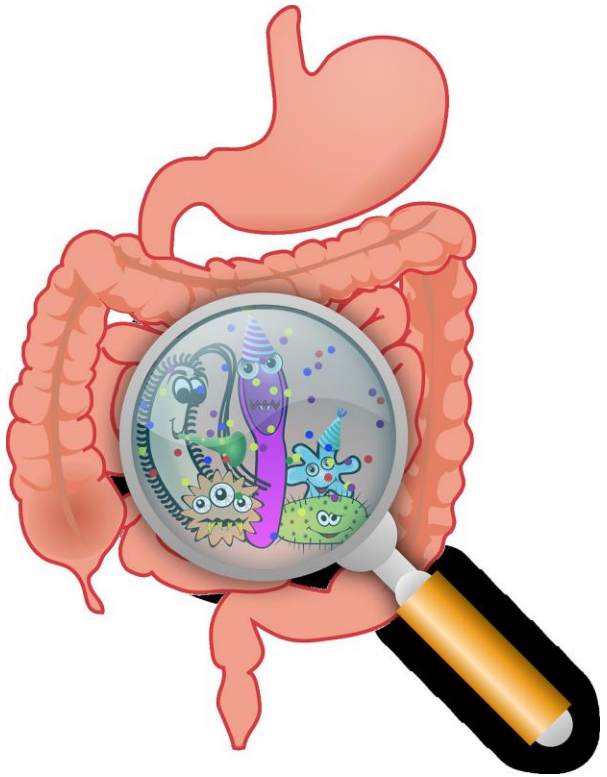
Research is showing that the gut microbiome is connected to our health and many different ways.

70% of our immune system is located in the gut, in particular, the gut is lined with mast cells.

Therefore, what is happening in our gut affects the way our mast cells are working, and how sensitive they are.

According to this paper
https://www.sciencedirect.com/science/article/pii/S2772753X23003180

‘Environmental exposure to various xenobiotics such as heavy metals, pesticides, and food additives can induce gut microbiome toxicity and contribute to the development or exacerbation of human diseases.’



Toxin Exposure and Gut Microbiome

Food Chemistry Advances 2023

'Anthropogenic sources of environmental toxins can include industrial pollution, agricultural runoff, transportation emissions, and household chemicals'

Environmental toxins have the potential to disrupt the animal gut microbiome (AGM), which can lead to various gut-associated diseases such as inflammatory bowel disease (IBD) and colorectal cancer.

The effects of environmental toxins on AGM, including dysbiosis, alterations in diversity, and microbial metabolism. We present evidence linking environmental toxins exposure to gut-associated diseases and mechanisms by which environmental toxins affect AGM.

https://www.sciencedirect.com/science/article/pii/S2772753X23003180

Toxins and Mast Cells

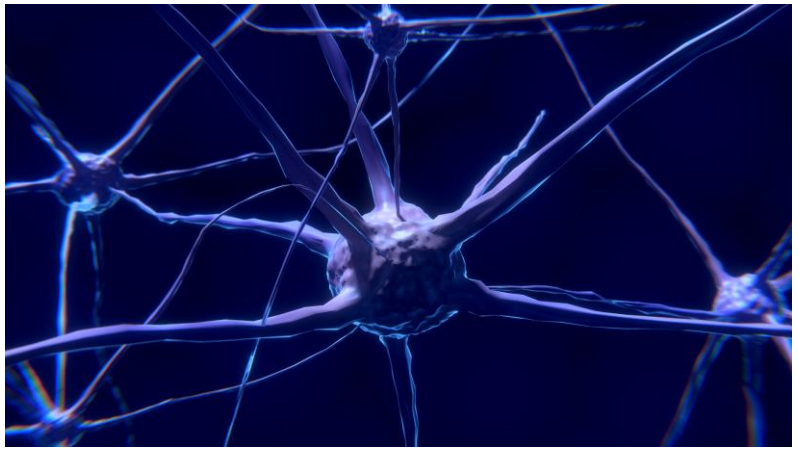
There is still more research needed, but there are some published studies that prove that toxin exposures can trigger Mast Cell Activation.

There are also studies that show a connection between MCS and MCAS.

Chemical Intolerance and Mast Cell Activation: A Suspicious Synchronicity (mdpi.com) 2023 Raymond F Palmer, Tania Dempsey, Lawrence Afrin,

'This study suggests that 60% of people with MCAS report Chemical Intolerance, and .....confirms the strong likelihood—given the known biological behaviors of mast cells, the known clinical behaviors of MCAS, and prevalent findings of clinical issues of CI in a sizable cohort of MCAS patients—that MCAS may be a key biomechanism (for Chemical Intolerance).

From a public health standpoint, improved regulation of environmental initiators such as pesticides and combustion products and triggers such as fragranced consumer products and food additives may help reduce the impact of CI and MCAS.'



JoX | Free Full-Text | Chemical Intolerance and Mast Cell Activation: A Suspicious Synchronicity (mdpi.com)

Toxins and Mast Cells

Heavy Metals

Studies show that aluminium and nickel both trigger mast cell degranulation
https://onlinelibrary.wiley.com/doi/full/10.1111/all.14519

Environmental Health Perspectives Journal 2003
'We observed that several metal and transition metal ions activated mast cells and enhanced allergen-mediated mast cell activation.
These effects of metal and transition metal ions on mast cells were observed at concentrations that do not result in direct cytotoxicity and might be relevant for environmental exposure.'
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241479/

Image by Anrita from Pixabay

Toxins and Mast Cells

Diesel Exhaust and Heavy Metals

According to this paper in Toxicology and Applied Pharmacology, 2019

It has been shown that environmental exposures such as diesel exhaust and heavy metals exacerbate mast cell degranulation and activation.

‘Mast cells are a key effector cell in type I allergic reactions. It has been shown that environmental exposures such as diesel exhaust and heavy metals exacerbate mast cell degranulation and activation.’

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6903393/

Image by Andreas Lischka from Pixabay

Toxins and Mast Cells

Glyphosate Pesticide

This study on mice published in Toxicology Journal in 2014 showed that airborne glyphosate can trigger mast cells in the respiratory system and trigger airway inflammation.

‘Exposure to glyphosate-rich air samples as well as glyphosate alone to the lungs increased: eosinophil and neutrophil counts, mast cell degranulation, and production of IL-33, TSLP, IL-13, and IL-5.’ Inflammatory cytokines associated with allergic inflammatory diseases.

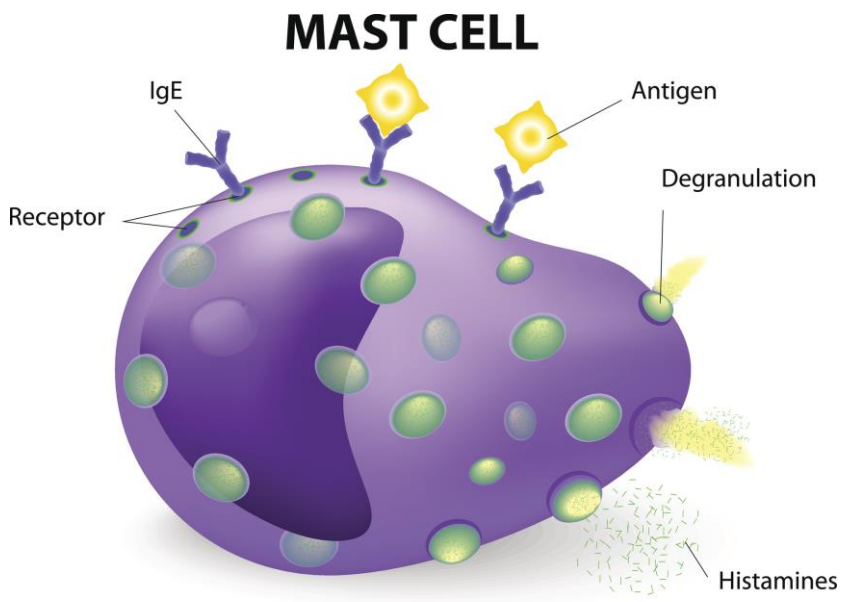
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4195794/

Image by Erich Westendarp from Pixabay

Triggers for MCAS

Study published in Expert Review of Clinical Immunology 2019 by Dr Theoharides

‘Mast cells are critical for the development of allergic reactions [2], but also act as sensors of environmental and psychological stress [3,4
In addition to allergens, mast cells are also stimulated by a variety of different triggers (Table 3) that include bacteria, drugs, foods, fungi, heavy metals, organophosphates, viruses, and ‘danger signals’ [2],
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7003574/



Credit:ttsz Getty Images Istock

Recent advances in our understanding of mast cell activation – or should it be mast cell mediator disorders?

Triggers of Mast Cells Without Degranulation

Triggers
Peptides
CRH
SCF
Cytokines
IL-1β
IL-33
IL-33
IL-33 + SP
Heavy metals
Aluminum
Cadmium
Mercury
Herbicides
Atrazine
Glyphosate
Pathogens
Borrelia (Lyme disease)*
LPS
Poly (I:C) (viruses)
Sporothrix (mold)*

Theoharis C. Theoharides,[a,b,c,d] Irene Tsilioni,[a] and Huali Ren[e]

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7003574/

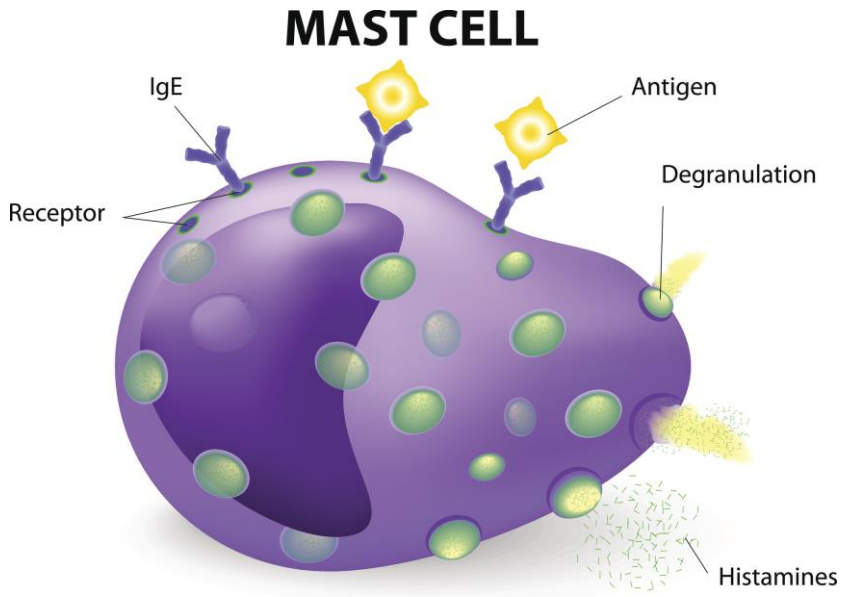
Triggers for MCAS

Pharmaceutical Drugs

The same study also notes that

‘Mast cells can respond to numerous drugs such as muscle relaxants, nonsteroidal anti-inflammatory, opioids, taxanes (chemo drugs), and vancomycin (antibiotic).’

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7003574/



Credit:ttsz Getty Images Istock

Triggers for MCAS - Plastics

Environmental Oestrogens in Plastics

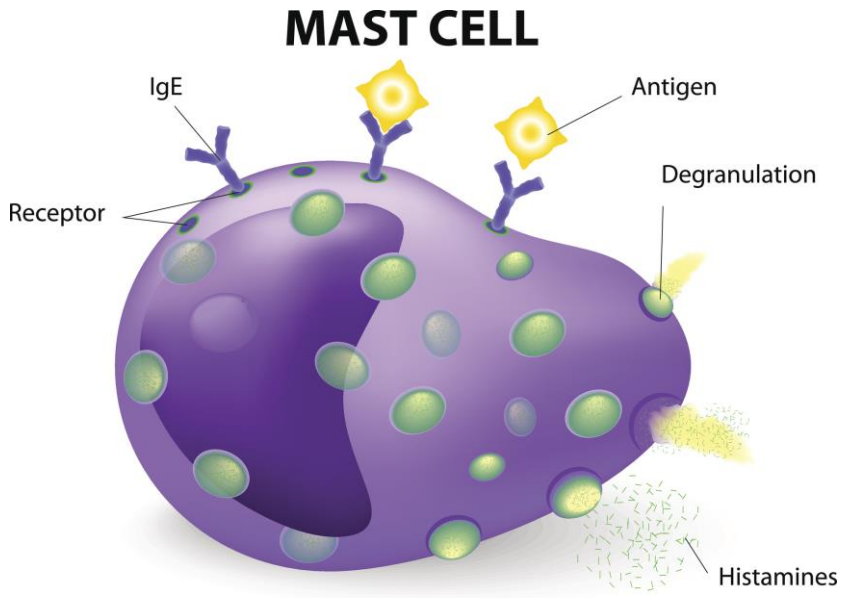
This 2007 study showed that environmental compounds that mimic oestrogen, such as those found in plastics, triggered mast cell degranulation.

This is one way in which exposure to plastics may trigger MCAS
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1797832/

Microplastic exposure

This 2020 study entitled 'Potential toxicity of polystyrene microplastic particles' looked at microplastics, specifically primary polystyrene (PS) and the effect they have at a cellular level. They concluded that

'We determined that PS particles were potential immune stimulants that induced cytokine and chemokine production in a size-dependent and concentration-dependent manner.'
https://www.nature.com/articles/s41598-020-64464-9

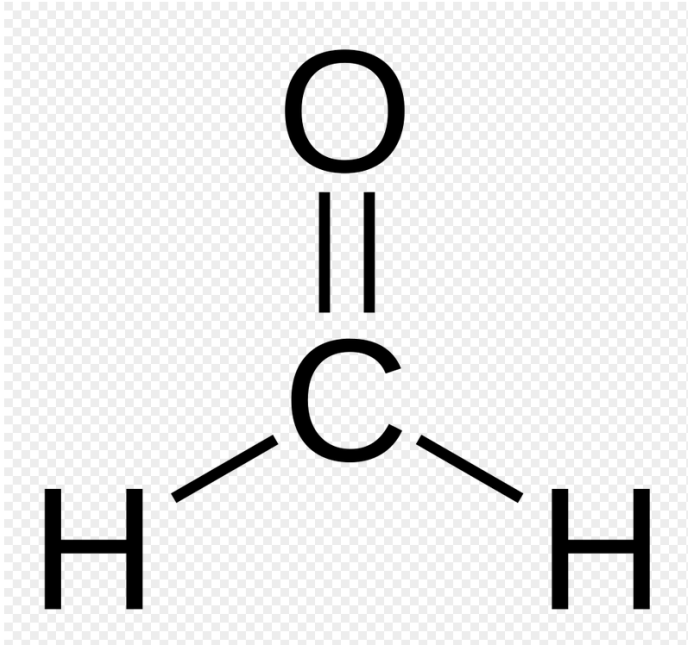


Credit:ttsz Getty Images Istock

Triggers for MCAS - Formaldehyde

https://www.sciencedirect.com/science/article/pii/S0378427409014477

This 2010 paper in ‘Toxicology Letters’ postulates that the inflammation and irritation that formaldehyde causes in the airways and respiratory tract is due to mast cells in the connective tissue being activated by the formaldehyde.



TILT

https://drtaniadempsey.com/toxins-in-the-home-part-2-chemical-intolerance/

‘Toxicant-Induced Loss of Tolerance. It appears mast cells play a role initiating and triggering TILT. At the same time, once an individual develops TILT, I suspect their risk of MCAS increases. More research is needed in this area.’ Dr Tania Dempsey

What Causes TILT?

There are two distinct phases to the development of TILT: Initiation and triggering.

Initiation – The first stage of TILT occurs when someone who is already susceptible, usually due to an underlying genetic factor, is exposed to a toxin. The exposure could be a one-time high-level exposure, as we saw from the World Trade Center tragedy in 2001.

Initiation can also occur as a result of prolonged, low-level exposure to toxins. For example, individuals who have silicone breast implants may experience chronic low-level exposure to organosiloxanes leaching from the implant itself. Some women go on to develop adverse reactions to everyday chemicals, often followed by worsening of symptoms.

In the initiation phase of TILT, the initial exposure causes a bodily reaction that makes the individual more sensitive to their environment.

While previously poorly understood, new research points to the mast cells’ role in the initiation response.’

TILT

https://drtaniadempsey.com/toxins-in-the-home-part-2-chemical-intolerance/

Second Phase

Triggering – Due to the overreaction to the initiating event, an individual essentially becomes sensitized. Subsequent low-level exposure to the same toxin or even a completely different toxin can trigger a symptomatic response. At this point, the person may become aware of a new and worsening sensitivity to common household items.

Chemicals that may become triggers include:

- Fragrances
- Detergents
- Hair spray
- Deodorant
- Cleaning chemicals
- Carpet
- Exhaust fumes
- Cigarette smoke
- Glue
- Stain remover
- And many more everyday items

Total Toxin Load

There are many practitioners working with MCAS who believe that how sick we become with MCAS is directly linked to how toxic we are.

Our total toxicity load is how many toxins are building up in our bodies

Some of us have lower toxin loads, and some of us build up high toxin levels quite quickly, for a number of reasons.

Those of us who have a higher toxin burden seem to have greater risk and severity of MCAS.

Some develop MCAS as a result of a one-off high toxin exposure, others from systemic, long-term build-up.

Some people find that reducing toxin levels helps to reduce their level of sensitivity.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8684076/

In this study, a 74-year old woman developed MCAS after food poisoning (Scombroid poisoning) from contaminated fish.

https://drtaniadempsey.com/toxins-in-the-home-part-2-chemical-intolerance/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4712864/

Internal Toxin Load

- Toxins that can't be eliminated by the body are stored in fat cells to protect vital organs.

Dr Sarah Myhill
'These chemicals are now ubiquitously present in the environment, and are well absorbed through food, water, by inhalation and through our skins. Many of them are very fat-soluble and bio-accumulate in our bodies.
I have yet to do a fat-biopsy on any patients and find that they are completely free from chemicals.'

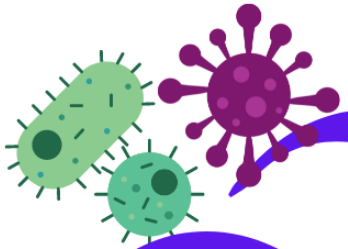
'I now suspect that many patients with CFS and MCS not only react to chemicals outside the body, but may also be reacting to chemicals within their own body-fat.'

https://www.drmyhill.co.uk/wiki/Detoxing_-_Far_Infrared_Sauna_(FIRS)

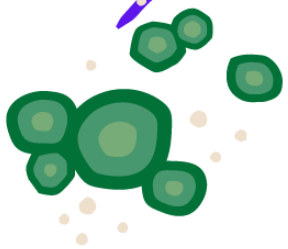
Image by Bruno from Pixabay

Dr Myhill recommends eliminating toxins and detoxing as part of her protocols for recovering from chronic illness.

Bacterial and viral infections



Mould



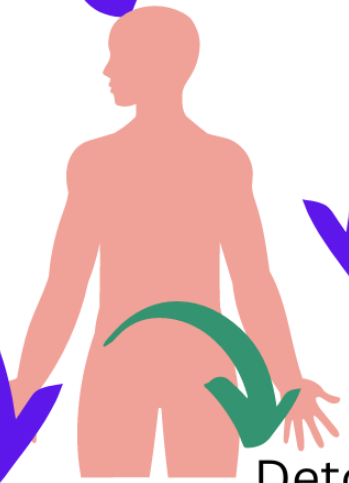
Stress

Chemicals in , paints, perfumes, toiletries, furniture

Heavy Metals

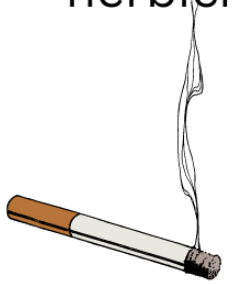
Foods and drinks

Plastics



Detox

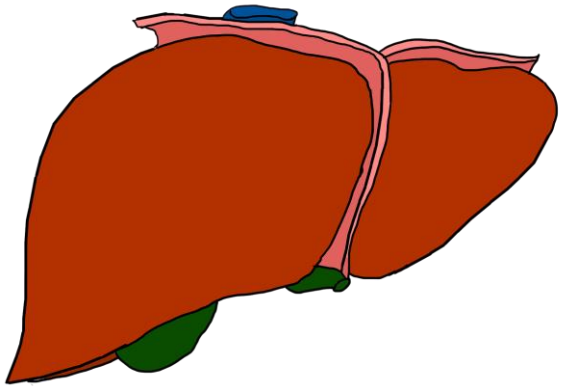
Pesticides, herbicides



Smoke

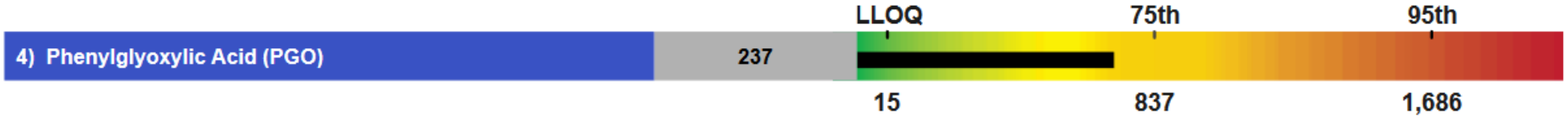
Reasons for High Toxin Load

- High toxic exposure
- Genetic Blockages – SNPs - Single Nucleotide Polymorphisms
- Unable to process toxins properly (low Glutathione)
- Build-up in system – can't be eliminated
- Excessive metabolic products – eg hormone imbalance, histamine issues, inflammation
- Prescription drugs and medications – all have to be detoxed
- Poor liver function – alcohol or toxin consumption – competition for liver pathways
- Poor bile production
- Constipation
- Lack of nutrients required for binding esp sulphur and glucosinolates



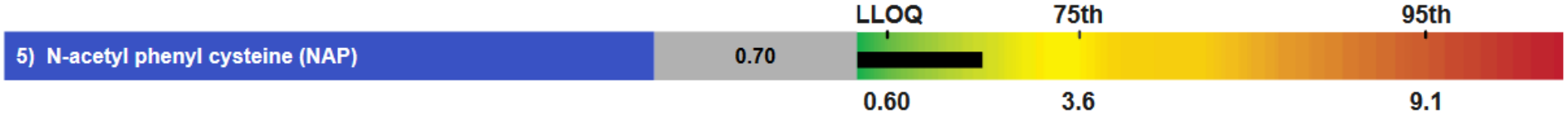
Testing for Toxins - GPL

https://healthpathpro.com/products/gpl-tox-non-metal-chemical-profile/ (£300)



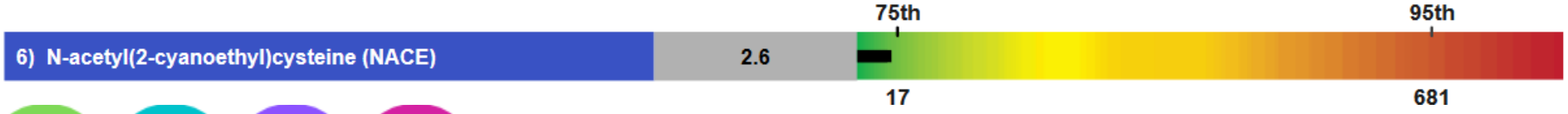
Parent: Styrene/Ethylbenzene

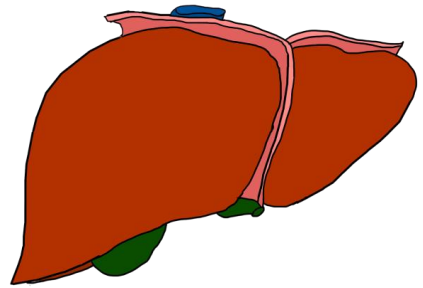
Styrene is used in the manufacturing of plastics, in building materials, and is found in car exhaust fumes. Polystyrene and its copolymers are widely used as food-packaging materials. The ability of styrene monomer to leach from polystyrene packaging to food has been reported. Occupational exposure due to inhalation of large amounts of styrene adversely impacts the central nervous system, causes concentration problems, muscle weakness, fatigue, and nausea, and irritates the mucous membranes of the eyes, nose, and throat.



Parent: Benzene

Benzene is an organic solvent that is widespread in the environment. Benzene is a by-product of all types of industrial processes and combustion, including motor vehicle exhaust and cigarette smoke, and is released by outgassing from synthetic materials. Benzene is an extremely toxic chemical that is mutagenic and carcinogenic. High exposures to benzene cause symptoms of nausea, vomiting, dizziness, lack of coordination, central nervous system depression, and death. It can also cause hematological abnormalities.





Genetics

‘In genetics, a **mutagen** is a physical or chemical agent that permanently changes genetic material, usually DNA, in an organism and thus increases the frequency of mutations above the natural background level.
The term genotoxic means toxic (damaging) to DNA.’
https://en.wikipedia.org/wiki/Mutagen

Investigations have identified several classes of environmental chemicals that modify epigenetic marks, including metals (cadmium, arsenic, nickel, chromium, methylmercury), peroxisome proliferators (trichloroethylene, dichloroacetic acid, trichloroacetic acid), air pollutants (particulate matter, black carbon, benzene), and endocrine-disrupting/reproductive toxicants (diethylstilbestrol, bisphenol A, persistent organic pollutants, dioxin).

DNA Adducts - chemicals bound to DNA – break the chain

Dr Werner Vosloo – case studies

Mould and Nickel causing DNA adducts in patients with MCAS.

The presence of these toxins at a DNA level was preventing correct cell functioning and triggering MCAS

Removal of these toxins resulted in significant MCAS improvement.
https://drvosloo.com/2019/02/21/what-is-mold-illness/

https://www.gov.uk/government/groups/air-quality-expert-group

How can We Protect Ourselves?

- There are lots of things we can do to improve our toxic load

- 2-fold approach
- Reduce toxin exposure
- **AND**

- Increase toxin elimination through detox

- Turn off the in-tap in, and turn up the out-tap!

- **More on this next time – 14th August**

Image by OpenClipart-Vectors from Pixabay

Activity - How Am I Exposed to Toxins

It is not possible to avoid toxins entirely – they are all around us, and it's important not to become paranoid about it!
But at the same time, it can be very helpful for those of us with MCAS who are struggling to control our symptoms to consider whether there may be an environmental factor that is contributing to our reactions.

What toxins are you exposed to regularly? How might these be impacting you?
Is toxin-exposure a factor in your MCAS?

- Building materials/paint
- New Furniture/household items
- Perfumes/fragrance
- Essential oils
- Cleaning products
- Toiletries
- Plastics
- Pesticides (non-organic foods)
- Unfiltered water
- Mould
- Cigarette smoke
- Vape smoke

Image by Sophie Janotta from Pixabay

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Any Questions?