

The Chaos of Restricted Substances Lists (RSLs): Managing and Aligning Lists of Chemicals of High Concern

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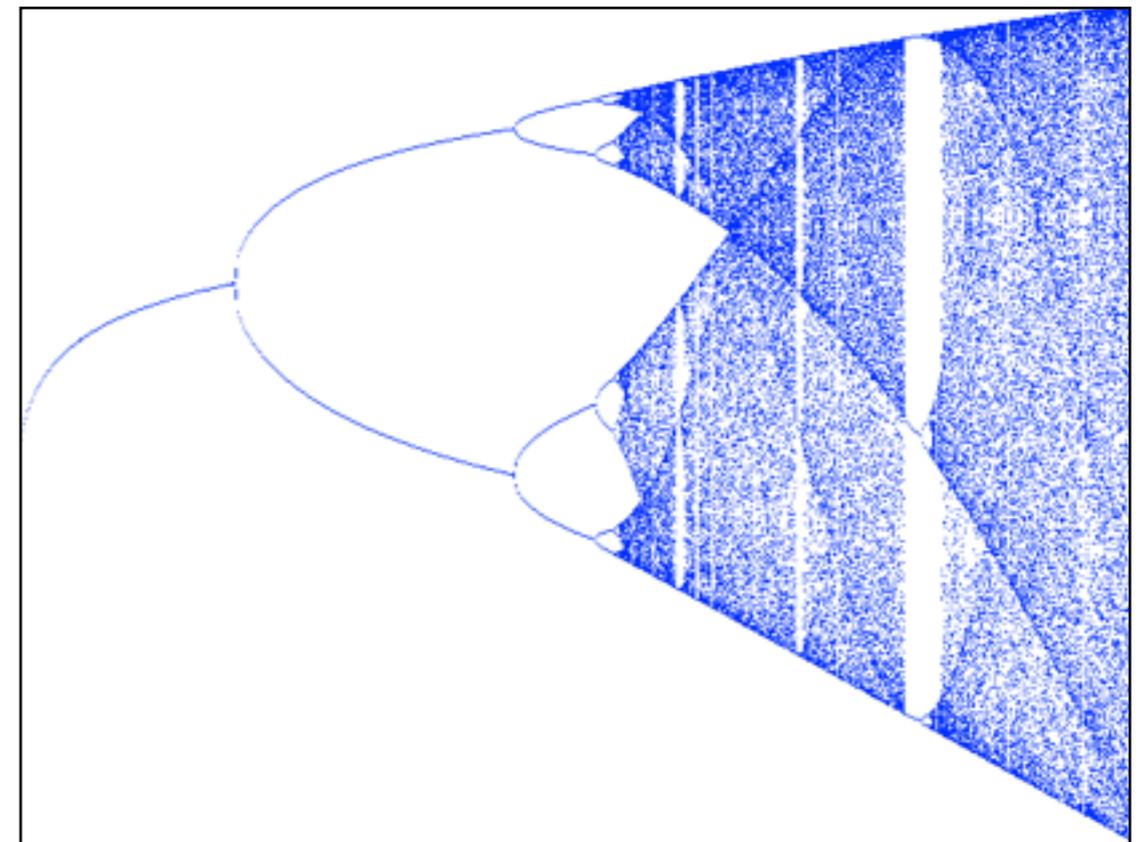
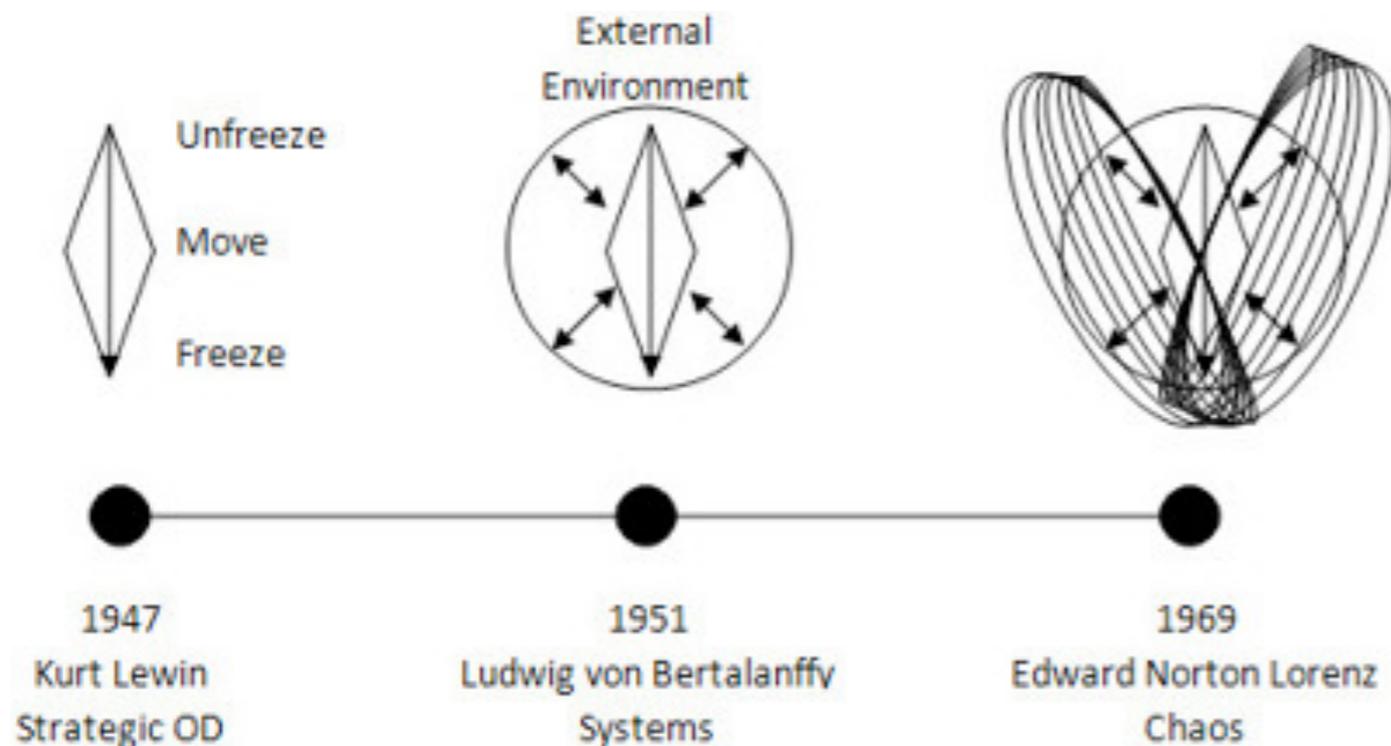
The Butterfly Effect: The idea effect that a flap of a butterfly's wings in Brazil can set of a cascade of atmospheric events that, weeks later, spurs the formation of a tornado in Texas



THE BUTTERFLY EFFECT

A way of describing how, unless all factors can be accounted for, **large systems remain impossible to predict with total accuracy because there are too many unknown variables to track.**

Turns out, The Butterfly Effect is an influencer of Lorenz's Chaos Theory. Which essentially states with enough variables, a state of chaos will be reached.



Chaos Theory Calculation by Gleick

CAS Registry

129 million organic and inorganic substances
67 million protein and DNA sequences
Around 15,000 additional new substances daily
~80,000 chemicals used in commerce today

- According to CAS

Growth of CAS Registry?

118 Elements on the Periodic Table
calculated for the total number of
potential permutations with repetition

=

- Subject to error

$\sim 2.864659 \times 10^{69}$

2,864,659,345,423,803,652,500,225,869,732,761,125,944,286,090,678,367,216,056,133,055,522,000
possible combinations of elements and chemical structures to consider as new substances

THE BUTTERFLY EFFECT

A way of describing how, unless all factors can be accounted for,

large systems remain impossible to predict with total accuracy because there are too many unknown variables to track.

the never list™

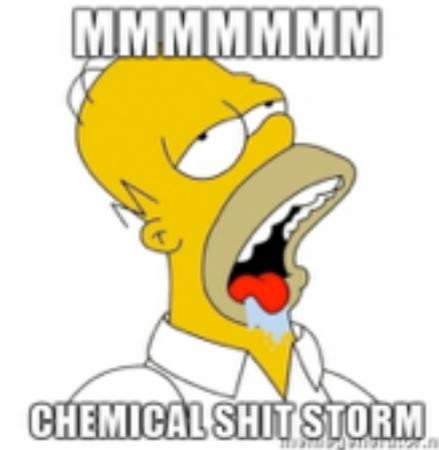
OR QUESTIONABLE INGREDIENTS. WHEN FORMULATING OUR PRODUCTS, WE PROHIBIT THE USE OF OVER 1,500 HARMFUL

The No No List

We are committed to food that is 100% clean in all our US bakery-cafes and grocery products. At Panera, clean describes food that does not contain artificial preservatives, sweeteners, and flavors along with colors from artificial sources. The list of ingredients that will never be in our pantry includes, but is not limited to:



Declare.



WATCHED CHEMICALS LIST



Authoritative

CoHC RSL MRSL

Screening





Visibility



Awareness



Unintended Consequences



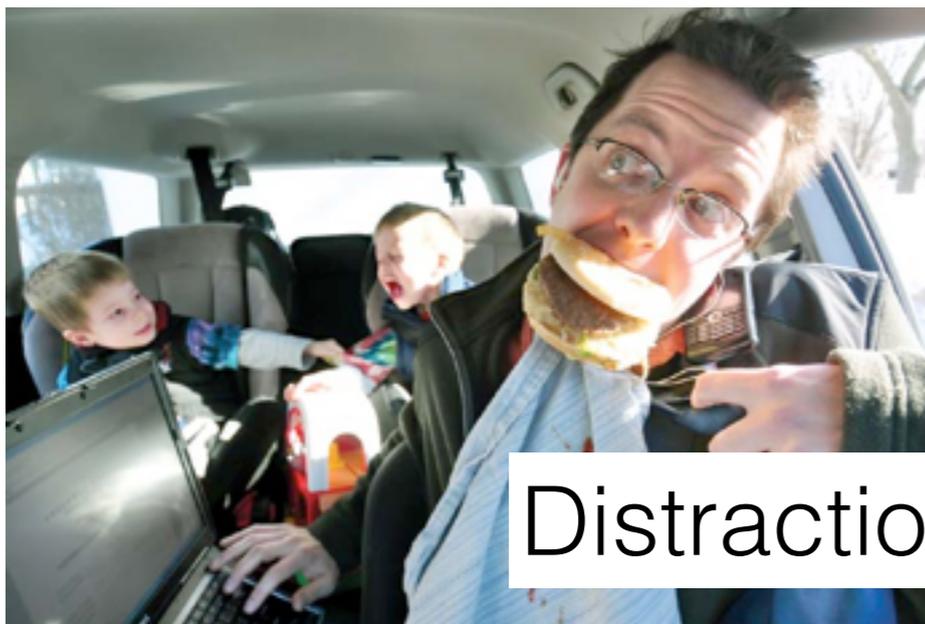
Blind Spots



Perspective



Distraction



Proximity



Eliminating Toxics in Carpet: Lessons for the Future of Recycling



An Optimizing Recycling Report by the Healthy Building Network
With Support from Changing Markets and the Global Alliance for Incinerator Alternatives
October 2017

Identifies 44 Chemicals “Toxic” Chemicals in Carpet

In essence, the report created a “NEW LIST” for carpet manufacturers & suppliers

Called the “Substances of High Concern in the Carpet Waste Stream”

Or since we need an acronym, the SoHCiCWS), pronounced SO SHIC WS

If we were to respond to the SoHCiCWS with all the “other relevant lists” in mind, how do we do?

NSF-140

0/44

LBC Red List

21/44

Cradle to Cradle

8/44

GreenLabel Plus

0/44

Oeko-Tex 100

11/44

Blue Angel

34/44

California Department of Toxic
Substance Control (DTSC)

27/44

Prop 65

10/44

Appendices

APPENDIX 1. SUBSTANCES OF HIGH CONCERN IN THE CARPET WASTE STREAM

Human Health and Environmental Hazards listed are taken from the Pharos Chemical and Material Library as of September 8, 2017. For more information on how these hazards are assigned, see the Full Systems Description here: https://www.pharosproject.net/uploads/files/library/Pharos_CML_System_Description.pdf.

| Substance | CAS No. | Human Health and Environmental Hazards |
|---|-------------|--|
| Per- and Polyfluoroalkyl Substances (PFAS) used in Stain Repellents | | |
| There are at least 3,000 chemicals in the PFAS chemical group. They are also sometimes referred to as PFC (perfluorinated chemicals). Some, like PFOS, C-8, are relatively well-researched and regarded as developmental and reproductive toxicants. Most have not been individually assessed for health and environmental hazards. (Perfluorinated Chemicals) break down very slowly in the environment. Inside the National Institute of Environmental Health Sciences, it can take several years for PFAS to leave the human body. As a class, these chemicals "have potential similarities in chemical properties and toxicity. . . . More research is needed." | | |
| 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,8-tetrafluorooctyl ester | 2144-53-8 | Unknown. |
| 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tetrafluorooctyl ester | 17527-29-6 | Unknown. |
| Perfluorohexanoic acid (PFHA, C-6) | 307-24-4 | PBT (Persistent Bioaccumulative Toxicant), Potential Endocrine Disruptor |
| Perfluorobutanoic acid (PFBA, C-4) | 375-22-4 | Potential Endocrine Disruptor, Skin and Eye Irritation |
| Hexamethylenediamine, homopolymer, 3,3,4,4,5,5,6,6,7,7,8,8,8-tetrafluoro-1-octanediol-1-ol | 357424-15-8 | Unknown. This polymer is based on fluorotelomers. |
| Antimicrobials | | |
| PBC (3-hydroxy-2-propenyl butylcarbamate) | 55426-53-6 | Developmental, Potential Endocrine Disruptor, Serious eye damage, Skin sensitization, Organ toxicant, Very toxic to aquatic life (Acute and chronic) |
| Methylisothiazolinone (MIT, MIT) | 26172-55-4 | Mammalian, Eye and skin irritation, Acute aquatic toxicant, Very ecotoxic to terrestrial vertebrates. |
| Silver nanoparticles | 7440-22-4 | Nano-form hazards unknown. Skin sensitizer, organ toxicant, acute aquatic toxicant. |
| Silver sodium hydrogen zirconium phosphate | 265847-11-8 | Nano-form hazards unknown. Skin sensitizer, organ toxicant, acute aquatic toxicant. |
| Triclosan | 3380-34-5 | PBT, Endocrine Disruptor, Acute and chronic aquatic toxicant. |
| Bis(2-Furyl)methane | 9011-05-6 | Respiratory (sensitizer-induced asthmagen) |
| Zinc Pyridione (ZPT) | 13463-41-7 | Reproductive, Mammalian, Eye and skin irritation, Skin sensitizer, Organ toxicant, and acute and chronic aquatic toxicant. |

The Chaos of Restricted Substance Lists (RSLs)

Small Group Exercises

#1



Knowledge

#2



Alignment

#3



Solutions

aha - how can BizNGO help each other in managing the proliferation of RSLs

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2



ALIGNMENT

What would be helpful to align RSLs?

What could go wrong with too many RSLs?

How are / could / should Authoritative Lists be incorporated or used in the creation of RSLs?

Is the criteria behind a "list" clear to you?

3



SOLUTIONS

What are the barriers to list voodoo?

What solutions or tools are you aware of for managing RSLs internally?

Do we need to Harmonize the RSL Process? If so, How and Why?

Do you have an example of a "safe" chemical improperly placed on a RSL?