Fact or Fiction?

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Smell and Health Hazards

The tongue can detect sweetness at a dilutions of one part in 200, saltiness at one in 400, sourness at one in 130,000, and bitterness at one in 2 million.[1] All of this pales when compared with our ability to detect extremely low levels of smells (*i.e.*, in the range of 50 parts per trillion [ppt] to 800 parts per billion [ppb]).[2]

To get a feel for our odor sensitivity, one part per million is like finding one second in 12 days, one part per billion is one second in 32 years, while one part per trillion is one second in 32,000 years. Talk about finding (or smelling) a needle in a haystack! Detection at these levels shows how clever we've become at analyzing for minuscule amounts; concentrations orders of magnitude lower than threshold levels at which chemicals cause toxic effects in mammals, including humans. However, as Herbert Rosenkranz and Albert Cunningham note: "In the public's perception of risk, scientific aspects of threshold, dose and mechanisms are rarely considered." Their work led to the conclusion "while chemicals with odor may be esthetically unpleasant and annoying, the presence of such chemicals, *per se,* is not automatically associated with a potential for detrimental health effects."[2]

Richard Hollingham reports: "Humans can distinguish around 10,000 different smells via 400 receptor proteins lining the nasal cavity. But it has long been known that not everyone smells the same smell, and now geneticists have shown that this could be because everyone has a different set of receptors.[3] This helps explain why some people are sensitive to certain odors while others are not. Brandy Fisher notes that "several studies indicate that 15–30 percednt of the general population report some sensitivity to chemicals, including fragrances, and 4–6 percent report that chemical intolerance has a major impact on their quality of life."[4] Fisher also adds, "an important issue to consider in investigating the effects of fragrance on the body is differentiating between psychological irritation from unpleasant chemical odors and actual sensory irritation from chemicals. Because of the strong tie between the sense of smell and emotion, researchers say foul odors provoke people to believe their health is being impacted when, in fact, the offending substance may be benign."[4]

Chandler Burr provides the following. "An astounding 1 percent of human genes are devoted to olfaction. 'So smell must be incredibly important for us,' notes NIH geneticist Dean Hamer, 'to devote so much of our DNA to it. The only comparable system—and this was the big surprise to everyone—is the immune system, and we all know why it's important to fight off invaders. This says smell was central in our evolution in a way that, presently, we don't really understand.'"[5]

Noses are Sophisticated

Burr's book, *The Emperor of Scent*, is an interesting account of Luca Turin's quest to discover how our noses work. Turin, who has an uncanny ability to distinguish components of just about any smell, proposes that our noses are incredibly sophisticated machines with thousands of tiny flesh spectroscopes embedded in the nose's mucus, shooting electrons at smelly molecules. Spectroscopes operate by measuring molecular vibrations, and Turin's theory proposes that these machines, which are huge, heavy, and expensively fabricated of metal and glass, could literally be constructed of tiny proteins that sit in our noses, allowing them to smell atoms.[6] The scientific community is struggling to accept this radically new idea.

Aroma engineering is taking smelling to new vistas. Lyall Watson reports the following. Researchers have found that a floral scent helps volunteers to perform puzzle solving tasks 17 percent more quickly and that the right smells in a Las Vegas casino can increase customer optimism, and therefore willingness to gamble, by as much as 53 percent. Muzak for the nose is now being offered, flooding the workspace with carefully selected smells. Results show that proofreaders are more accurate when reading to the accompaniment of peppermint or lavender odors. And in Japan, Takasago International has discovered that a whiff of lemon wakes the staff up the first thing in the morning, the comforting scent of roses prepares them for lunch, and jasmine later in the day is uplifting for tired keyboard operators. At Duke University, a hint of menthol in the changing room seems to be paying dividends in preparing athletes for

big events.[7] Here's my favorite: A study conducted at Yale University has shown that students exposed to chocolate smell while studying for an exam can recall the material better if they are also exposed to chocolate while writing the exam.[8] Lastly, some Japanese researchers have developed an "air cannon," a device for directing evocative smells to people exploring virtual-reality environments. This device is "so accurate that it can target a single individual while leaving the next person unaffected." It's proposed that marketing specialists could use this technique as a way of tempting shoppers by "wafting the scent of the latest perfume or an expensive blend of coffee in their direction."[9]

Multiple Chemical Sensitivity

One can't write about smell without mentioning multiple chemical sensitivity (MCS). MCS is claimed to be an environmental illness which manifests itself in the scents of perfume, shampoo, hairspray, chewing gum—basically anything imaginable that carries the slightest odor.[10]

Here are some examples. Michael Fumento reported about a woman who hung her mail on a clothesline for a week before reading it to allow the 'toxins' in the ink to dissipate.[11]

During the late 1980s, the journal *Environmental Medicine* announced that the paper on which it was printed had been changed because several readers had complained that the old paper had made them ill.[12] If these seem far-fetched, a reviewer of a book that promotes MCS (*Chemical Exposures*—reference 13) had this to say, "There may be helpful information; unfortunately the book is printed on such a toxic paper and/or ink that merely opening it makes me sick."[14]

MCS is a highly controversial topic. Folks such as Dr. Dean Edell and John Stossel don't believe it has any merit, while others such as Nicholas Ashford and Claudia Miller have written two volumes on the topic. Dean Edell says, "I have been accused of being insensitive—and much more—for my stand on this question. But the truth is that there is no proof that a disease such as multiple chemical sensitivity (MCS) exists. And I am hardly alone in my belief: The American Medical Association, the American Academy of Allergy and Immunology, the California Medical Association, the American College of Physicians, and the International Society of Regulatory Toxicology and Pharmacology have all said the same thing. Still, it is a hot topic among lawyers, politicians, researchers, and regulatory agencies, and people have been awarded workmen's comp because of MCS. The problem is that when you surreptitiously expose such patients, unbeknownst to them, to the substances they claim they are sensitive to, they don't react. And there is a very high rate of various psychological problems in such patients—often depression and anxiety."[15]

John Stossel observes: "Over the years I have interviewed two dozen people who say they have multiple chemical sensitivity, and it strikes me that their lives revolve around being sick. It's as if being a victim is what gives them purpose." Like Edell, he notes that patients reactions depend not on what chemicals they encounter, but on what chemicals they think they've encountered. "In blind tests, patients in a sealed chamber couldn't differentiate between chemicals sprayed into the chamber and salt water sprayed in."[16]

By contrast, Nicholas Ashford and Claudia Miller have published two books titled *Chemical Exposures* (first edition in 1991 and second edition in 1998). They claim their second edition "draws almost all from mainstream, peer-reviewed scientific publications often written by environmental scientists, toxicologists, and occupational medicine physicians." Their second edition highlights the Gulf War Syndrome and women who trace a myriad of adverse health symptoms to silicone breast implants.[13] Both of these subjects are highly controversial. Breast implants were discussed in a previous column on junk science.[17]

References

1. Peter Farb and George Armelagos, *Consuming Passions*, (Boston, Houghton Mifflin Company, 1980), 22.
2. Herbert S. Rosenkranz and Albert R. Cunningham, "Environmental odors and health hazards," *The Science of the Total Environment*, **313**, (2003), 15.
3. Richard Hollingham, "In the realm of your senses," *New Scientist*, **181**, 40, (January 31, 2004).
4. Brandy E. Fisher, "Scents & Sensibility," *Environmental Health Perspectives*, **106**, A594, (December 1998).
5. Chandler Burr, *The Emperor of Scent*, (New York, Random House, 2002), 8.
6. Chandler Burr, *The Emperor of Scent*, 56.
7. Lyall Watson, *Jacobson's Organ*, (New York, A Plume Book, 2001), 168.
8. Joe Schwarcz, Radar, *Hula Hoops and Playful Pigs, Toronto*, ECW Press, (1999), 133.
9. Will Knight, "Where's that funny smell coming from?" *New Scientist*, **182**, 22, (April 3, 2004).
10. Peyton Knight, "MCS Reeks of B.S. (Bad Science)," *The DeWeese Report*, **6**, 12, (August 2000).
11. Michael Fumento, "Sick of it all," *Reason*, **28**, 20, (February 1996).
12. Stephen Barrett and Ronald E. Gots, *Chemical Sensitivity*, (Amherst, New York, 1998), 45.
13. Nicholas A. Ashford and Claudia S. Miller, *Chemical Exposures: Low Levels and High Stakes, 2nd Edition*, (New York, John Wiley & Sons, 1998).
14. Page 5 of review of above book on www.amazon.com: accessed October 22, 2003.
15. Dean Edell with Melissa Houtte, *Life, Liberty, and the Pursuit of Healthiness*, (New York, HarperCollins Publishers, 2004), 393.
16. John Stossel, *Give Me a Break*, (New York, HarperCollins Publishers. 2004), 211.
17. Jack W. Dini, "Junk Science," *Plating & Surface Finishing*, **91**, 11 (November 2004).