

## ISONITRILES - The "Godzilla of odors"

"The smell is indescribable. Not that it is so ungodly beyond all expected levels of stink, which it approaches, but more it is like nothing you have ever experienced and your brain while certainly repulsed to the extrem [sic], struggles to define it. A double assault at your senses. It has a persistent linger on everything that comes near it including your [brain cells]. Much like a horrible picture... that can't be purged from your mind. Even after the scene changes you are left with a ghost difficult to eradicate..."

"I have no good description for it. Besides me, the two other people nearby, who were brave enough to try it... had the same thing to say, 'I can't describe it but it sure is horrible'. There does not seem to be a way to smell it only slightly... I mean if you get enough of it to register, it's enough to saturate your senses... Initial exposure goes like this... You know it's going to smell so you try very hard to not get a big whiff by waving the stopper... getting braver every attempt until... Bingo! It's actually funny to watch someone's reaction when it finally sets in. It's a very strange face... It took an hour and a half gallon of IPA 99%/HCL 32% to clean that smell out of my hood. If you do it, plan to spend some time destinking... Tiny whiffs of remnant traces on the hood tended [to] remind my nose of the full scale event and I dreaded it."

-- Descriptions of an isonitrile written by readers of science--madness.com, online forum for amateur chemists.

### Chemistry defeats the "Godzilla of odors"

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Courtesy American Chemical Society  
and World Science staff

In the realm of stinkers, a group of chemicals called isonitriles may have no rival. Odor theorist Luca Turin once termed isonitriles "the Godzilla of smells" and the world's worst odor.

"You can't believe how awful they smell," Turin said. "They make you vomit your guts out instantly." They've even been patented for use as nonlethal weapons.

The merciless stench is a key reason why chemists have largely shunned the isonitriles as ingredients in important chemical reactions.

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Безмилостната воня е главната причина за това, че химиците гледат да отбягват изонитрилите като компоненти във важни химични реакции.

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But rejection of isonitriles comes at a price, because they have distinct advantages over other ingredients for many purposes.

Now, two chemists say they have come up with something to salvage the dismal situation: nose-friendly isonitriles.

Michael C. Pirrung and Subir Ghorai, of the University of California at Riverside, are reporting development of the new compounds. These so-called "isonitrile esters" have pleasant fragrances and work just as well in reactions as existing compounds, they claim.

The palette of aromas include that of soy, malt, natural rubber, mild cherry and even taffy, according to a study in the Sept. 20 issue of the Journal of the American Chemical Society.

Another problem with usual isonitriles is that existing recipes for making them require use of hazardous compounds. Pirrung and Ghorai say theirs can be made safely.

Also known as organic isocyanides, isonitriles are defined as compounds with a nitrogen and a carbon atom connected by a link known as a triple covalent bond.

Witnesses to the stench claim words cannot describe it. But after reading many first-hand accounts of their ordeals, one begins to piece together a dim picture of the odor as a sort of beast that takes the whole sensory apparatus hostage, leaving victims feeling abused and violated. Like a brutal tyrant, it seems, the smell makes itself felt even after one leaves its immediate presence (see sidebar).

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