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Reducing Tobacco-Related Harm: FDA's Proposed Product Standard for Smokeless Tobacco

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Under U.S. products liability law, a product is considered legally defective if “the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design.”[1] The simple premise of this rule is that if it is possible to manufacture a dangerous product in a manner that reduces its risks, the manufacturer must do so. In theory, smokeless tobacco products should provide a clear application of this principle. By altering the manufacturing process, tobacco companies could significantly reduce the levels of highly carcinogenic compounds referred to as tobacco specific nitrosamines (TSNAs), making their products less toxic for consumers. There is no question this change is feasible; low-TSNA smokeless tobacco products are already on the market in the U.S., and in Scandinavian countries, most notably Sweden, low-TSNA snus products hold a large market share.

Holding tobacco companies liable for failing to make this change, however, is no easy task. In 2010, Altria (the parent company of U.S. Smokeless Company) settled a lawsuit that included allegations that high TSNA levels made its smokeless tobacco products unreasonably dangerous.[2] Although Altria paid the plaintiffs \$5 million, there is no indication that this settlement led to any reformulation of its products. Further litigation against smokeless tobacco companies has been limited, in part because juries tend to be unsympathetic towards plaintiffs who “chose” to use tobacco.[3]

Now that the U.S. Food and Drug Administration (FDA) regulates tobacco, however, it has the authority to take the common-sense principle embedded in the concept of “reasonable alternative design” and apply it to TSNA levels in smokeless tobacco products. Under the 2009 Tobacco Control Act (TCA), the FDA has broad authority to issue “product standards,” including requirements “for the reduction or elimination of ... constituents” in tobacco products, if it would be “appropriate for the protection of public health.”[4]

To that end, the FDA recently proposed a product standard that would limit the levels of *N*-nitrosonornicotine (NNN), a TSNA, in smokeless tobacco products.[5] The proposal—the first tobacco product standard the FDA has ever proposed—was published in the Federal Register on January 23, 2017 and is open for public comment until July 10, 2017. After that

time, the FDA will review the submitted comments and, in consultation with the White House's Office of Management and Budget, determine whether or not to finalize the proposed rule. If it puts the proposed rule into effect, it would be a significant and important step towards minimizing the harms from smokeless tobacco use.

The Proposed Smokeless Tobacco Product Standard

The FDA's proposed product standard would limit the level of NNN in smokeless tobacco products to no more than 1 microgram per gram ($\mu\text{g/g}$) of tobacco on a dry weight basis. Because NNN levels can increase over time (due to bacterial activity), the rule would also require each batch of smokeless tobacco products to have an expiration date, and the manufacturer would have to demonstrate, through "stability testing," that NNN levels remain below the allowable limit through the expiration date. Because storage conditions may also impact NNN levels, manufacturers can also include storage instructions on the labeling (e.g., requiring refrigeration). Retailers who fail to follow the storage instructions or who sell products beyond their expiration dates could be held liable for violating the regulation.

Notably, the FDA's regulation does not propose limits on NNK, another carcinogenic TSNA. The FDA concluded that while the relationship between NNK and lung cancer in smokers is well established, the evidence is less definitive regarding the relationship between NNK and cancer in smokeless tobacco users. However, the FDA noted that "[b]ecause many methods available to reduce NNN also reduce NNK," it is likely that the NNN product standard will have the effect of concurrently reducing NNK levels in smokeless tobacco.

Scientific Evidence Supporting the Proposed Product Standard

The FDA's proposed rule summarizes three types of evidence that collectively provide strong support for the proposed product standard: studies demonstrating the carcinogenicity on NNN in animals (primarily rats and mice), human studies linking NNN to higher risks for esophageal cancer and head and neck cancer in smokers, and – perhaps most significantly – substantial geographic differences in oral cancer risk from smokeless tobacco use, believed to be due to TSNA levels. In countries that market smokeless tobacco products with lower TSNA levels, the risk for oral cancer for smokeless tobacco users is similar to that of people who do not use tobacco, whereas in countries such as the U.S. where TSNA levels are higher, the risk for oral cancer is considerably higher for smokeless tobacco users.[6,7]

Based solely on the excess oral cancer risk posed by higher-NNN smokeless tobacco products, the FDA calculates that the proposed product standard, if put into effect, would prevent 12,700 new cases of oral cancer and 2,200 deaths over 20 years.[5] In addition to saving lives and reducing medical costs, this would also reduce the "disfigurement," "functional problems," and "other serious cosmetic problems" that can result from the intensive surgery required to treat oral cancer. The FDA estimates that the overall economic impact of the rule—balancing the costs of compliance with the benefits from the reduction in oral cancer—would be a net gain of approximately \$15 billion over the next twenty years. This projection, however, is likely an underestimate, as the estimate of benefits is based

solely on reductions in oral cancer and does not quantify expected reductions in esophageal and laryngeal, and potentially pancreatic and other cancers with the concurrent reduction in NNK. (There is some risk that reducing the toxicity of smokeless tobacco products could encourage non-users to take up the products or discourage current users from quitting. In the proposed rule, the FDA concludes that this is unlikely to occur, particularly given that smokeless tobacco products will still remain harmful, and it notes that “smokeless tobacco use prevalence would need to nearly triple in order to completely offset the expected reduction in excess lifetime cancer risk” that will result from the NNN standard.)

Importantly, the FDA had previously acknowledged that reducing TSNA levels in smokeless tobacco would benefit public health. In November 2015, the FDA authorized the sale of 8 new snus products marketed by Swedish Match under the General Snus brand name. In its decision memorandum, the FDA noted that the products “contain significantly lower levels of NNN and NNK compared to over 97% of the [smokeless tobacco] products currently on US market,” and that “reduction of NNN and NNK levels in [smokeless tobacco] products could reduce the cancer risk for consumers using ST products.”[8] The FDA went on to say that “an individual using these products with reduced NNN levels could decrease the excess cancer risk by 90% compared to use of moist snuff (market share: 82%), 67% compared to use of chewing tobacco (market share: 15%), 38% compared to use of United States (US)-style snus, and 92% compared to use of dry snuff.”[8]

The FDA's conclusions sounded a warning bell for manufacturers of smokeless tobacco with higher TSNA levels. Although this decision came in a different regulatory context, it effectively laid out the case for an NNN product standard. If reducing NNN levels is feasible and would have such a significant impact on product risks, what would be the justification for not requiring such a reduction?

Technical Feasibility

Although the TCA requires the FDA to base its decision-making on the projected benefits to public health, the law also instructs the FDA consider “the technical achievability of compliance with [a product] standard.”[4] Currently, the level of NNN in U.S. smokeless tobacco products varies as much as 80-fold.[9] The variation in TSNA levels—both in the U.S. and between countries—demonstrates that it is technologically feasible for companies to comply with the proposed product standard. Indeed, the FDA notes that there are already smokeless tobacco products on the market in the U.S. with NNN levels below the proposed threshold.[5]

The FDA's proposed rule includes an extensive discussion of the many ways smokeless tobacco manufacturers could change their products or processes to reduce NNN levels.[5] These include using lower NNN-types of tobacco (including genetically engineered tobacco), altering the tobacco curing method, applying a bactericidal solution to the tobacco, modifying the fermentation process, using pasteurization or heat treatment, employing refrigeration and changing other storage practices to reduce bacterial growth, and more. These changes would have some associated costs (including costs for seeking regulatory approval of modified products that comply with the product standard), and it is possible that

some smaller smokeless tobacco producers may exit the market. However, it is notable that the smokeless tobacco market in the U.S. is highly concentrated. U.S. Smokeless Tobacco (owned by Altria), American Snuff Company (owned by R.J. Reynolds), and Swedish Match collectively control nearly 90% of U.S. market share.[10] These companies unquestionably have the technical and financial capacity to comply with the proposed rule.

A New Challenge: President Trump's Executive Order on Regulations

On January 30, 2017, one week after the FDA's proposed NNN rule was posted in the Federal Register, President Trump signed Executive Order No. 13771.[11] This Order – referred to as the “one-in-two-out” requirement, mandates “that for every one new regulation issued” by the Department of Health and Human Services (FDA's parent agency), “at least two prior [HHS] regulations be identified for elimination.” It further requires that for Fiscal Year 2017, any costs imposed on industry by a new regulation be completely “offset” by repealing other regulations. Critically, the “cost” of the regulation is measured only by the costs imposed on the regulated entities—the benefits to public health or to society as a whole are not taken into consideration. Thus, in order to finalize the proposed product standard, the FDA would have to identify two other rules to be eliminated, and all new costs to the tobacco industry attributable to the NNN rule would have to be zeroed-out by rescinding other regulations. This is true regardless of the fact that the NNN rule, according to the FDA's analysis, would clearly provide a net benefit to both health and the economy.

Obviously, this Order puts the NNN rule's future in jeopardy. Already, public interest groups have sued the Trump Administration, arguing that the Order unconstitutionally interferes with Congress's ability to direct the actions of executive agencies like the FDA.[12] Indeed, the Order creates barriers to the NNN rule that are incompatible with the standards set forth by Congress in the Tobacco Control Act. Congress instructed the FDA to make decisions based on what is “appropriate for the protection of public health” – not based on the principle of minimizing costs to the tobacco industry. We therefore believe the pending lawsuit has merit. While this battle plays out in court, however, it is quite likely that the finalization of the NNN rule could be delayed.

The Importance of the NNN Product Standard

Although the prevalence of smokeless tobacco use in the U.S. is relatively low compared to cigarette smoking, finalizing and implementing this initial product standard—if the FDA is able to overcome the challenges posed by Executive Order 13771—would nonetheless have several important implications. First, it would establish an initial precedent for a tobacco product standard in a context where the scientific evidence is strong and the potential public health benefit is evident. If challenged, the rule would be clearly defensible in court, which would help to lay the groundwork for future product standards involving other tobacco products, including cigarettes. This could pave the way for future product standards that tackle more controversial topics such as menthol and nicotine reduction. Second, since the enactment of the Tobacco Control Act, the FDA has been bogged down in product-by-product reviews of thousands of tobacco products.[13] Issuing a product standard would demonstrate the FDA's willingness and ability to more proactively move towards regulating

entire categories of tobacco products, which would allow it to have a much more powerful impact on public health. Finally, this precedent may encourage other countries with higher levels of smokeless tobacco use—including in Southeast Asia, where 90% of the world's 300 million smokeless tobacco users reside[14]—to take similar regulatory steps.

Even though a low-TSNA “reasonable alternative design” for smokeless tobacco products has long been apparent, lawsuits have failed to motivate most tobacco companies to manufacture less harmful products. By finalizing a product standard to reduce NNN levels, the FDA can protect the public from one of the major cancer risks associated with smokeless tobacco products.

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