

## Layman's summary

*Nitrous oxide (N<sub>2</sub>O) is a naturally occurring gas that is also used by people for various purposes. People also use nitrous oxide as an illegal drug known as laughing gas. The use of laughing gas leads to public safety concerns, partly because it is used behind the wheel. The problem for law enforcement, however, is that there are no tools available to immediately test whether someone has used laughing gas. One potential tool could be testing saliva for nitrous oxide.*

*However, nitrous oxide is also naturally produced in the mouth by bacteria. The nitrous oxide produced can potentially make the results of a saliva test inaccurate. This review investigates whether nitrous oxide production by bacteria in the mouth could influence a saliva test that could be used by the police to test on-site whether someone has used laughing gas. It examines which bacteria might produce nitrous oxide, what factors can influence this process, and whether the naturally produced nitrous oxide in the mouth could affect a police saliva test for laughing gas.*