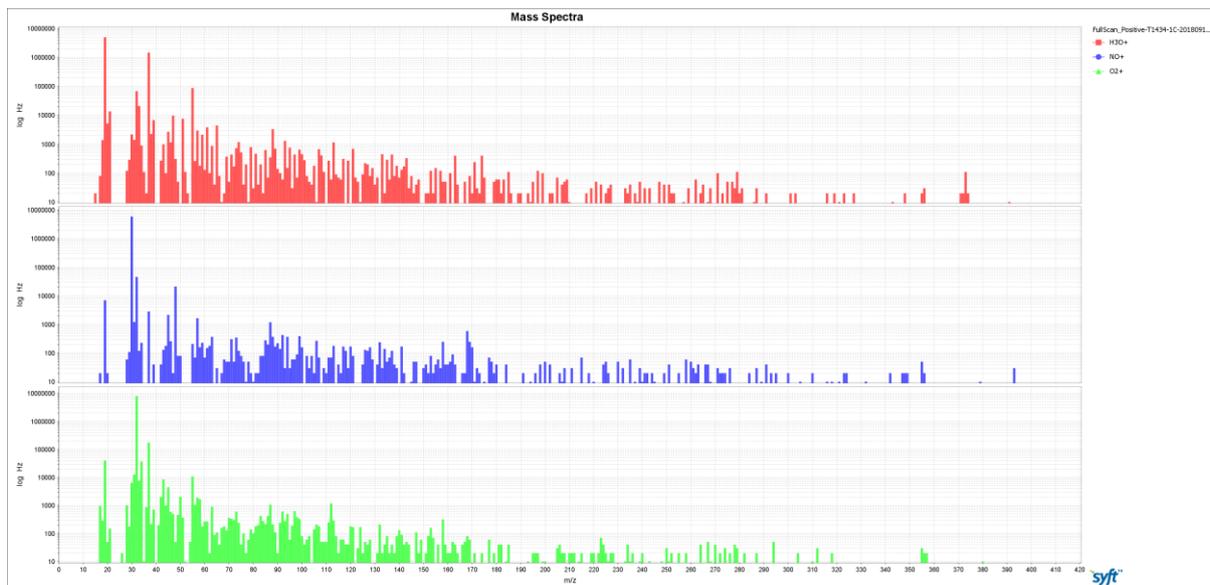




Compound identification by SIFT-MS (“Mass Scan”)

Mass Scan is a qualitative, untargeted, analysis of the air sample components using SIFT-MS technique. The complexity of the data generated from an analysis is related to the complexity of the sample matrix. The more chemical species in the sample, the greater the number of mass spectra peaks generated. In some cases, the mass spectral profile of one chemical species may overlap that of another chemical species, making definitive identification challenging. Fortunately, SIFT-MS uses multiple reagents that react with a particular chemical species that improves our ability to identify ‘unknown’ chemicals in the air samples.

First, we take mass spectra of your samples with three chemical ionisation reagent ions, H_3O^+ , NO^+ , O_2^+ :



We then match the peaks against the library of volatile compounds supplied by the manufacturer (SYFT.com). Below we list a number of points to be considered when interpreting the reports for Mass Scan:

- Since the peaks of the same mass could be coming from different compounds (interference), the limit of quantification in Mass Scan mode is dependent on the nature of substance. In our reports we are using “consensus” LOQ of 100 ppb, which is 20 times higher than for our targeted SIFT analyses.
- In the cases when the set of mass spectral peaks is distinct (e.g. siloxanes) and/or there are strong grounds to suspect the presence of highly toxic substances (e.g. phosgene, hydrogen cyanide), we might report those with concentrations lower than 100 ppb.
- Mass Scan is a screening technique. It can reliably show the absence of a certain compound. However, **its presence should be confirmed**, preferably by validated methods.
- As SIFT-MS method allows for rapid identification of a wide variety of compounds, it is very possible that some of those may come up as a surprise (due to lack of historical observations). Before raising the alarm we recommend to compare the reported results with published exposure limits (e.g. NZ “[Workplace Exposure Standards and Biological Exposure Indices](#)” available from [worksafe.govt.nz](#)).

If you have questions regarding SIFT-MS or a SIFT-MS report you have received, please contact Dr. Anatoly Chernyshev at anatoly.chernyshev@analytica.co.nz for a free consultation.