

## Pollution in your home

*Education in Chemistry*

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[rsc.li/2OZbzX4](https://rsc.li/2OZbzX4)



**These teaching ideas accompany the article *Pollution in your home* by Nina Notman. Download this article and all of these teaching ideas and resources from: [rsc.li/2OZbzX4](https://rsc.li/2OZbzX4)**

Mass spectrometry, either on its own or combined with other separation techniques such as gas or liquid chromatography, is one of the most powerful tools in an analytical chemist's arsenal. This article provides an excellent example of how scientists are applying mass spectrometry in the field. The application described, to monitor air pollutants inside our homes is one every student can relate to, and will be valuable extra reading for students studying 16–18 chemistry courses, including vocational courses.

### Relevant to your syllabus

Download a list of specification points this article supports from the *Education in Chemistry* website: [rsc.li/2OZbzX4](https://rsc.li/2OZbzX4).

### TOF-MS Triominoes

#### Card sort activity, ages 14–16

Mass spectrometry, and in particular time-of-flight mass spectrometry, can be confusing to students because of the number of stages involved in the process. In this hands on activity, students sort triominoes information cards about the mass spectrometry process into groups according to the stage to which the information applies.

There are four stages in TOF-MS:

- ionisation (either electron impact or electrospray);
- acceleration;
- flight tube;
- detection.

Students sort the information about each of the four stages by arranging the triominoes. Photocopy sets of triominoes and cut them up. Give small groups of students the central black triangles and the outer triangles separately, and ask them to match three outer triangles to each of the relevant central triangles.

Download the set of cards from the *Education in Chemistry* website: [rsc.li/2OZbzX4](https://rsc.li/2OZbzX4).

### More recommended resources

- In this short exercise, [students identify the chemical found in the urine sample of a murder victim](#) by analysing the sample's mass spectrum and a database of mass spectra of common drugs and poisons.
- The [full version of the murder investigation](#) can be found in the Spectroscopy in a suitcase student's resource pack
- Activities 10.1.2 and 10.1.3 within the [Starters for 10 mass spectrometry chapter](#) provide students with practise at interpreting elemental and molecular mass spectrometry traces.
- This online CPD course gives [guidance on teaching mass spectrometry](#).
- A [sample activity](#) from the mass spectrometry CPD course.