Different factors which can affect IAQ in our houses. Smokers.

The quality of the air we breathe in indoor spaces is incredibly important for our health and well-being and it is often overlooked. You may not realize it, but the air inside our homes, offices, and other indoor spaces can often be more polluted than the air outside. This is because indoor air can become contaminated with a range of pollutants, such as dust, mould, and chemicals from cleaning products and building materials.

Within the **K-HEALTHinAIR pills (K-pills),** we will study different issues affecting IAQ and potential solutions that can be applied to get healthier indoors. In this K-pill, we will make a simple analysis of smoking indoors in different parameters measuring the air quality. To do so, we will use data from one week in three houses with different conditions. The parameters provided by the monitoring tools (MICA by INBIOT) are CO_2, VOCs INDEX, PM_{10} and Formaldehyde. A simple questionnaire was filled by the home owners and main issues have been shown in the following table:

	HOUSE 1 (H1)	HOUSE 2 (H2)	HOUSE 3 (H3)
Inhabitants	5	4	4
Pets	YES	NO	NO
Smokers	YES	NO	NO
Use of aerosols	YES, but not daily	NO	NO
Plants	NO	YES	YES
Ventilation	Manually through windows	Manually through windows	Manually through windows and ventilation grills
Type of kitchen	Independent kitchen from other rooms	Independent kitchen from other rooms	Independent kitchen from other rooms

Following figures show the comparison among the three houses. The evolution of CO_2 concentration and TVOCs do not show relevant differences, so the different factors that the houses have do not affect these parameters.
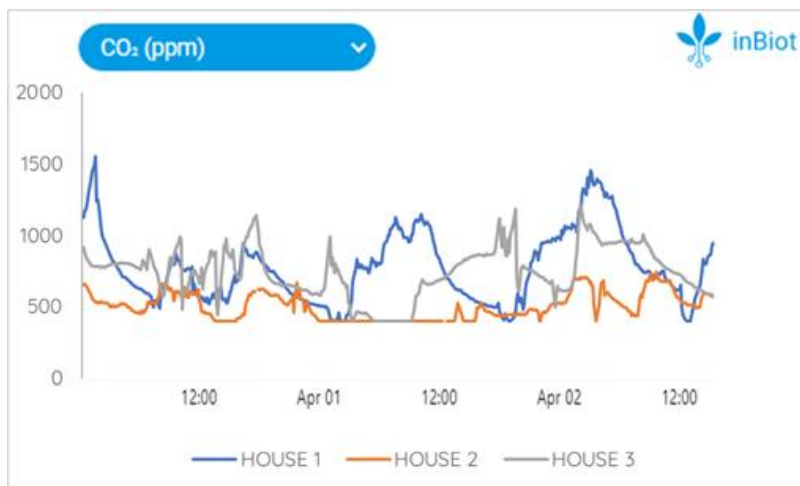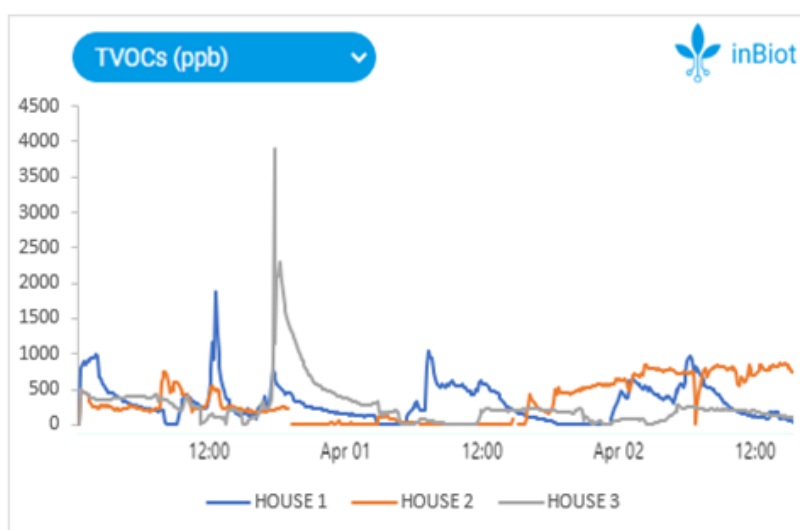

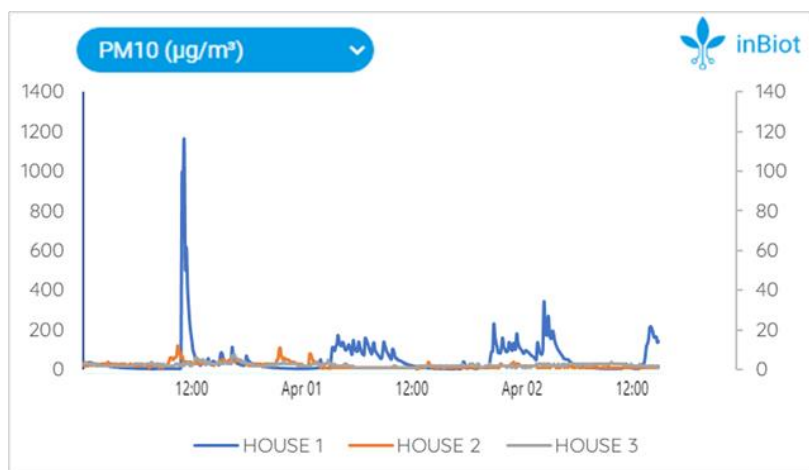Figure 1: Evolution of CO2 concentration

Figure 2: Evolution of the TVOCs
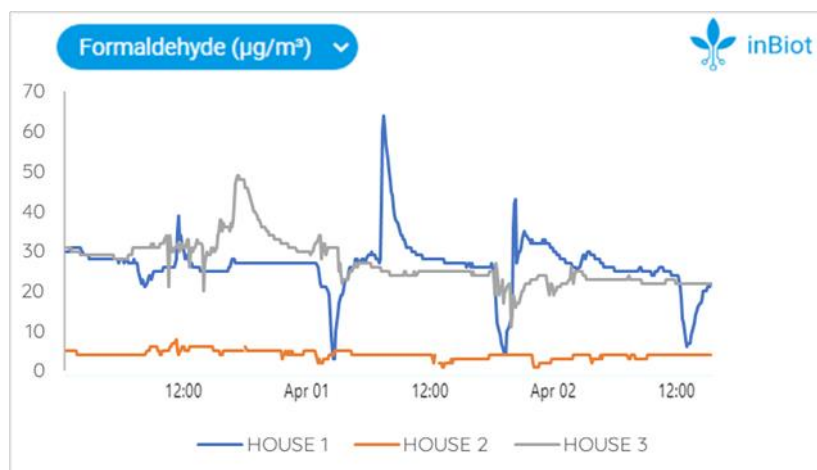
Figure 3: Evolution of PM 10

Figure 4: Evolution of the Formaldehyde

Nevertheless, formaldehyde and PM_{10} figures show that the house 1 has in average higher levels of these parameters. In this house, the owners responded affirmatively to the presence of pets and smokers. PM10 levels have many peaks reaching high values during the day and then during night or during ventilation PM_{10} concentration decreased drastically. The first huge peak corresponds to an event in which cooking is done with a ceramic hob with the kitchen door open and without ventilation. The formaldehyde figure shows base levels around 30 µg/m³ with different variations. On the other hand, house 2 shows similar values of formaldehyde, but the reason has to be still studied. Anyway, these values are quite low comparing with maximum recommended levels[1].