AROMATIC AMINES

We can bet that you have never heard of aromatic amines even tough you use them on a daily basis. Every time you eat, take a pill, buy clothes, use electronics, drive a car or smoke a cigarette you use aromatic amines somehow. **Aromatic amines are everywhere** as they are key building blocks for the manufacturing of plant protection products, dyes, and large scale pharmaceuticals including antibiotics, steroids anti-inflammatory and modern anti-viral drugs.

HOW IS IT THE PROBLEM?

Chemicals made of aromatic amines resist environmental processes and tend to accumulate in the environment, and further cause decreased resistance of crops to microbials, significant decline in polling insects population impaired fertility in humans, chronic diseases, neurological disorders, cancer as well as the occurrence of bacterial resistance to antibiotics. Meanwhile, attempts aimed at remediating the issues raised by the above-mentioned chemicals leave behind the building blocks they are made of. Yes, namely, aromatic amines. These are no good news, as aromatic amines reveal **severe mutagenicity and carcinogenicity.**

The scale of the problem is staggering because ever-growing demand leads to introducing more and more of aromatic amines into the environment and remediating the aromatic amines is challenging. Fortunately, there is a strong incentive to do it anyway.

HOW TO APPROACH IT?

We have a technological gap that makes the synthesis of aromatic amines difficult. Because of this, approaching wastes containing aromatic amines is very tempting, as these compounds are already there, it is just enough to recover them.

THE SOLUTION

The present research project proposes a new technology of aromatic amines CIRCULAR SYNTHESIS as well as a TOOL for carrying out this synthesis. Within this idea we will use 3D printing technology to fabricate a modular device that will be able to capture hazardous wastes and transfer them back to aromatic amines to be used again. As such, the project will address two problems: it will make possible simultaneous (**1**) elimination of aromatic amines from the environment and will (**2**) produce aromatic amines from wastes, thus, no new batches will be needed.

HOW WE ACHIEVE THIS SOLUTION

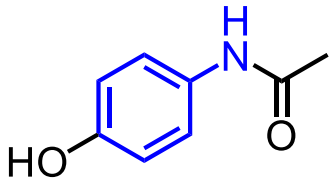
The technology will base on modular device that will comprise modules CAPP CAT SEP, **that will work in a following way**. CAPP will use plasma to release aromatic amines from wastes, and SEP will extract them. Simultaneously, CAT will operate as a background catalytic moderator, that will enhance the functioning of other modules.

The research will cover 3D designing and 3D printing of modular device, as well as optimizing process parameters to make the circular synthesis functioning. To achieve this, several advanced techniques will be applied, and the final outcome will be a new **TECHNOLOGY** that will deal with problems related to aromatic amines, and a **DEVICE** for carrying put the technology.

GET A QUICK GUIDE

WHEN WAS THE LAST TIME YOU TOOK A PAIN KILLER?

AROMATIC AMINES are essential in the production of a variety of chemical products, including large scale pharmaceuticals.
Look at the structure of *Paracetamol*:



This makes the demand for **AROMATIC AMINES** ever-growing

As the result **AROMATIC AMINES** are found even in places they shouldn't be, including cooking oil:

The problem is, that **AROMATIC AMINES** are **TOXIC MUTAGENIC** and **CARCINOGENIC**

Because **AROMATIC AMINES** cannot be replaced, how can we limit their impact on the environment?

The project provides the answer:

CIRCULAR SYNTHESIS OF AROMATIC AMINES

Within its premise, we will develop a unique 3D-printed device, that will capture hazardous wastes, and will transform them back into **AROMATIC AMINES**