



# CONFRONTING PERSISTENT POLLUTANTS IN CHINA

## UNIDO TAKES ON UPOPs

### POP Priority

The Stockholm Convention is a global treaty to protect human health and the environment from Persistent Organic Pollutants (POPs). The Convention went into force in May 2004 and was signed by more than 150 countries.

In addition to a number of chemicals known as POPs – which include pesticides, DDT and industrial chemicals – the Convention focuses on reducing, and where possible, eliminating the release of unintentional POPs (UPOPs).

UPOPs are a group of chemicals that are unintentionally formed from thermal processes involving organic matter and chlorine, as a result of incomplete combustion or chemical reactions. Examples include polychlorinated dibenzo-*p*-dioxins (PCDD), polychlorinated dibenzofurans (PCDF), which are also known as dioxins and furans.

Since the Stockholm Convention opened for signature in 2001, UNIDO has played a leading role implementing the treaty and proactively assisting countries to meet their obligations. Particular emphasis is placed on the introduction of best available techniques (BAT) and best environmental practices (BEP) to ensure that the release of UPOPs is minimized.

### Tackling hazardous waste in China

In response to the SARS (Severe Acute Respiratory Syndrome) outbreak in 2003, the Chinese government was obliged to take action to prevent the epidemic, and chose to dispose of medical waste through the emergency building of technologically basic incinerators. It was only later that the environmental consequences of 332 such incinerators became clear. By 2006, the amount of medical waste produced in China was approximately 670,000 tons, and dioxin releases from medical waste incinerators accounted for about 11.5% of total dioxin releases in China.

In China, the Stockholm Convention entered into force on 11 November 2004. Article 5 of the Convention requires the Parties to take measures to reduce the release of PCDD/F and UPOPs. Waste incinerators –

including co-incinerators of municipal, hazardous or medical waste and sewage sludge – are top of the list of emission sources. As part of China's National Implementation Plan (NIP) to implement the Stockholm Convention, medical waste incineration is listed as a key PCDD/F release source and subject to the Action Plan for Reduction and Elimination of PCDD/F Releases.

### Best available techniques with UNIDO

Together, China's Ministry of Environmental Protection (MEP) and UNIDO developed a project to manage China's medical waste in an environmentally sustainable manner. Funded by the Global Environment Facility (GEF), the project is designed to carry out the demonstration and replication of best available techniques and best environmental practices in the medical waste management sector to continuously reduce PCDD/F releases. It focuses on upgrading incineration equipment and air pollution control systems, and introducing alternative non-incineration techniques and technologies in order to avoid PCDD/F releases.



*Bag filter/air pollution control at a pyrolysis, Nanchang, China. Demonstration of best available techniques (BAT) and best environmental practices (BEP).*

This project assists medical institutions to adopt environmentally friendly practices at medical waste segregation processes, in order to reduce potential dioxin emissions at source. It focuses on establishing

optimal control and operating conditions for incineration and pyrolysis processes to reduce PCDD/F releases and meet performance requirements.

Demonstration facilities installed across different regions in China help divert a significant portion of medical waste to alternative non-incineration processes such as autoclaving, microwaving, and chemical disinfections which directly avoid the formation of PCDD/F.



*Microwave disinfection in the city of Pingliang, China. Demonstration of BAT and BEP.*

Ahead of its completion, the project has already proved successful by replacing outdated and over-capacity incineration facilities with non-incineration technologies that effectively avoid dioxin releases. The project has also stimulated a new industrial sector dedicated to the manufacturing of non-incineration technologies (in particular autoclave systems). Finally, the project has helped create a medical waste transfer system among incineration and non-incineration facilities to optimize operating performance and reduce costs.

See more at <https://open.unido.org/index.html> with project ID: 104036

## China's vast iron and steel sector

China is both the largest producer and consumer of steel in the world. Global crude steel production in 2013 was 1.61 billion tons, which includes 813 million tons from China, accounting for nearly half of the global market share.

Accordingly, China has the highest global level of

annual PCDD/F releases in the iron and steel industries, as approximately 26 per cent of global UPOPs emissions from this sector are generated in China.

Because of the substantive impact of the iron and steel industry on global emissions, the Chinese government has started to introduce several measures, including updating national iron and steel policies in order to restructure the sector and reduce its environmental impact. In order to further strengthen these efforts and support Stockholm Convention implementation, UNIDO and MEP are currently working on another project for the sustainable development of the iron and steel industry.

## Reducing risks with sustainable solutions

The objective is to move the national iron and steel sector towards the widespread utilization of best available techniques and best environmental practice, and to ensure the reduction of UPOPs emissions, especially PCDD/F emissions, in accordance with the Stockholm Convention. The project will also focus on the integration of other key elements, such as process and energy efficiency, and applying alternative technologies to reduce emissions from other pollutants like mercury and nitrogen oxides (NOx). During the project's implementation, UNIDO's Resource Efficient and Cleaner Production (RECP) concept will be introduced as a tool to enhance process efficiency and reduce risks to human health and the environment.

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