İZAYDAŞ | Temiz Çevre Sağlıklı Toplum

IZAYDAS PLANT TRIAL TEST BURNING and ABOUT DISPOSAL OF POPs STOCKS

Persistent Stockholm Convention on organic pollutants on 12 January 2010 and entered into force on persistent organic residue within the scope of Turkey's contract POPs for goals, and financed by GEF assistance POPs Elimination of residues of POPs Reduction Project of Swing' by being implemented. This project is carried out jointly by the Ministry of Environment and Urbanization as national executive organization, UNDP and UNIDO as GEF implementing institutions.

The objective of the project is to clean up contaminated areas contaminated by the relevant POPs and chemicals, mainly to protect global human health and the environment by removing POPs from pesticide and PCB stocks, disposal of PCB containing equipment which will be dismissed in the long term as required by the Stockholm Convention, unintentional POPs to reduce the oscillations and to increase the technical capacity.

In this context, IZAYDAŞ, which has been carrying out the hazardous waste disposal since 1996, has become a stakeholder in this project with the aim of increasing the quality and scope of its activities and has become the only disposal facility with the technological infrastructure improvement and trial burning activities being carried out by eliminating the residues of POPs in our country.

The experiment was carried out on 12-18 December 2016 with the aim of revealing the possibility of disposing of the incineration plant by burning the POPs waste. The purpose of this study is; IZAYDAS incineration plant fulfills international standards, including the requirements defined in the Stockholm Convention and the GEF guide documents, both in terms of national laws and regulations, by eliminating POPs -Pesticide residues as well as oils containing highly concentrated POPs-PCBs representing POPs waste, is indicative of the expected technical /environmental performance indicators.

The limit values that must be in accordance with national and international standards and regulations are given below.

• Destruction Efficiency (DE) ≥ 99,99%

• Destruction Removal Efficiency (DRE) ≥ 99.999999

• Flue gas dioxin furan <0,1 ng / Nm^3

• F / K Treatment effluent dioxin furan <0,3 ng / Nm^3

Four separate menus were created and tested and hundreds of parameters were analyzed by taking 69 samples from seven different points at the combustion facility chimney, physical chemical wastewater treatment output, slag, fly ash (boiler and electrostatic filter ash) and filterpress cakes. The dioxin furan, PCB, HCH, DDT, OCP and heavy metals were analyzed in each sample and the content of the waste supplied to the furnace was analyzed to evaluate the removal efficiency.

In order to calculate the DE and DRE values related to the destruction of the plant's POPs in accordance with the purpose of the trial burning, transformer oils containing high concentrations of liquid PCB (polychlorinated biphenyls) has been provided from Ereğli Iron and Steel Factory and the solid HCH (Hexachlorocyclohexane) has been provided Merkim / IZMIT field. All waste pre-operations were done by IZAYDAS.

Incineration was performed by adjusting the chlorine content in the waste fed to four separate tests to between 1% and 3%, and the waste menu fed is given in Table 1.

Table 1. Trial burn waste feed menü

WASTE STREAMS	TEST 1A-TEST 1B			TEST 2A-TEST 2B			TEST 3A-TEST 3B			TEST 4A-TEST 4B		
	Standard Waste Supply			HCH-FEED (2,23% Halogen)			HCH-FEED (2,98% Halogen)			PCB OIL FEED (2,03% Halogen)		
	Waste Feed Rate kg/h	Chlorine Ratio %	Chlorine Entry Rate kg/h	Waste Feed Rate kg/h	Chlorine Ratio %	Chlorine Entry Rate kg/h	Waste Feed Rate kg/h	Chlorine Ratio %	Chlorine Entry Rate kg/h	Waste Feed Rate kg/h	Chlorine Ratio %	Chlorine Entry Rate kg/h
Bunker	3337	0,5	16,69	3125	0,5	15,63	3125	0,5	15,63	3429	0,5	17,15
Barrel	328,67	8,39	27,57	320,34	24,66	79,01	330,50	35,26	116,54	222,29	0,90	2,01
PCL	665	0,16	1,06	609,37	0,16	0,97	624,54	0,16	1,00	443,7	0,16	0,71
Aqueous Liquid	392	0,16	0,63	414	0,16	0,66	418	0,16	0,67	397	0,16	0,64
Special Liquid	244	0,16	0,39	250	0,16	0,40	250	0,16	0,40	145	48,27	69,99
Fuel	95,87	0,27	0,26	144	0,27	0,39	31	0,27	0,08	61,91	0,27	0,17
TOTAL	5062,5	0,92	46,59	4862,7	2,00	97,06	4779,04	2,81	134,31	4698,901	1,93	90,65

The temperature, pressure, pH, velocity, flow rate and flue gas emissions of many points of the plant were continuously monitored during the test burning. The trial burning lasted 6 days and sampling, analysis and reporting were carried out by TÜBİTAK-MAM.

In the trial burning study, it was determined that the following results were obtained and that the IZAYDAS Incineration Plant provided the requirements of international standards of DE and DRE and international contracts. The results are given in Table 2 and Table 3.

Table 2. DE and DRE results

TEST	DE		
	OCP	HCH	PCB
TEST 2A	99,9999894%	99,9999894%	-
TEST 2B	99,9999857%	99,9999857%	-
TEST 3A	99,9999932%	99,9999932%	-
TEST 3B	99,9999919%	99,9999919%	-
TEST 4A	-	-	99,9999532%
TEST 4B	-	-	99,9999532%

TEST	DRE		
	OCP	HCH	PCB
TEST 2A	99,9999991%	99,99999991%	-
TEST 2B	99,9999992%	99,9999992%	-
TEST 3A	99,9999994%	99,9999994%	-
TEST 3B	99,9999995%	99,9999995%	-
TEST 4A	-	-	99,9999996%
TEST 4B	-	-	99,999999%

Table 3. Dioxin-furan results in flue gas and physical chemical treatment effluent

Measured / Analyzed parameter	Concentration, ng/Nm³								
	TEST 1A	TEST 1B	TEST 2A	TEST 2B	TEST 3A	TEST 3B	TEST 4A	TEST 4B	Limit Value*
Test Date	12.12.2016		13.12.2016		14.12.2016		15.12.2016		
PCDD	0,0037	0,0046	0,0055	0,0115	0,005	0,004	0,0031	0,0033	-
PCDF	0,0187	0,0213	0,0288	0,0592	0,0408	0,0312	0,0271	0,0285	-
Dioxin/Furan (Total I-TEQ)	0,0224	0,0258	0,0342	0,0707	0,0458	0,0351	0,0303	0,0318	0,1

After the trial burn, the letter taken from the Ministry of Environment and Urbanism was given to the letter attachment.