For a cleaner earth

Harmful Pollutant Erasing Soil Purifying Liquid

MEISTER

Characteristics of the purifying liquid

For a cleaner earth

Harmful pollutant erasing soil cleaning liquid

Turns soil that has been polluted by heavy metals and dioxins into a clean state in a short period.
Without using heat, applying pressure nor producing any carbon dioxid making it a very environmentally friendly purification method.
Noneed of any expert knowledge/ expertise as it can be set up easily with common construction machines at the place of use.

Purification aid liquid

This liquid can break down molecules to 2 nano-sizes. It is composed of chemical enzyme generating liquid and refined water.
It breaks up the benzene ring to safely do oxidative decomposition. (oxidative decomposition using liquids with nitric acid added to it are known, but to clean the soil, our recommended molecule break down liquid is best.)

Purification process

Rivers, canals, waterways for different uses, lakes and ponds, ports, different treating centre's, different disposal sites, different incineration centres, factories, residential areas and agricultural land

Polluted land

Analysis of the soil
Analysis of the soil and ash produced from incinerations beforehand by an analysis company.
Identification of the pollution levels and pollutants
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Construction and setting up
Adding the harmful pollutant erasing soil purifying liquid
Purification of the polluted soil
No need of expertise/ expert knowledge and can be set with common construction machines used in the building industry.
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Related patents : new pollutant eraser against pollution from organic compounds : already applied for an international patent PCT/JP2009/n. 071170

Purifying liquid

Uses water, enzymes, zeolite, carbon and other natural materials as raw materials to be friendly to the environment. Safe and reassuring for users and residents near.

Special carbon and zeolite

Carbon is made from a special fine processing of plant based carbon. 30 angstrom sized pores form on the surface of the carbon creating various shapes of fullerene (soccer ball type, carbon nanotube type, buckyonion type, horn type) 10g of this special carbon with a specific surface area of 1200 to 2000 m^2/g could absorb gas the volume of the Tokyo Dome.

Mixing the two together increases the purifying effect.

Our original liquid has both mixed together making it possible to clean VOC, oil polluted heavy metal pollution, DXN, PCB, harmful gases and other pollutions in a short period of 1 to 2 months.

Dioxin	Adsorption ➡ decomposition ➡ Adsorption/decomposition ➡ Adsorption/decomposition ➡ release
Heavy metals	Corrosion ➡ oxidation/reduction ➡ corrosion ➡ oxidation/reduction ➡ (repeats itself)

Setting curing

The liquid penetrating the soil will decompose pollutants in a short period of 1 to 2 months.

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Detoxified soil

Stir mixer

Injection pump

Flow rate and pressure management measuring machine

Marking verification

Drilling

Injecting

Provided by Kuwahara corp.

Analysis and setting up

Analysis of the soil

An analysis company will collect some soil by boring before the purification process begins. The collected soil and ashes will be analysed to determine the pollution levels and the pollutants present in the soil. This information will be taken into consideration for the process of application and type of purification liquid that will be used.

Planting the rod

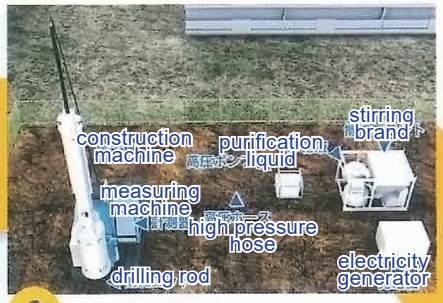
Collecting the soil

The usually recommended expertise/ expert knowledge is unnecessary. We use a environmentally friendly purificator that doesn't use heat, apply pressure or produce any CO2. Nor is any special brand is needed. It is a eco friendly process that only kneads and stirs the soil. The depth of the pollution erasing is up to 100m*.

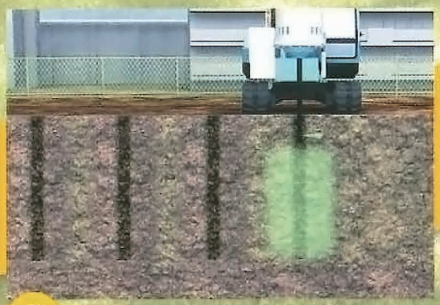
* separate consultation is necessary for purification deeper than 30m

Process B

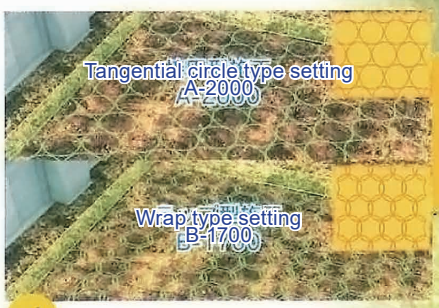
1 purification works by a boring machine



2 image of the placement
The purification liquid providing device will be placed next to the polluted area



3 cross section image
(tangential circle type setting)
The boring machine can move making it possible to purify up to a specific deepness without the necessity of procedures such as drilling to apply the purification process fast and repetitively to the planned area.



4 different methods of application can be chosen from depending on the circumstances.

The best method of setting up is chosen by considering the different factors of pollution?

Process A

Accurate stirring and kneading operations are possible

Stirring and kneading operations done by stabilisers or blenders

approximately one meter depth from the surface of the pollution area

Process B

no digging is needed.

underground indentation kneading done by a ground improvement machine

Boring machine
approximately 3 to 100 meters depth from the surface of the pollution area

Process C

Accurate stirring and kneading operations are possible

serial 4 axis combined method done by an all purpose ground quality improving machine

approximately 3 meters depth from the surface of the pollution area

we have different soil improvement machines suitable to different conditions

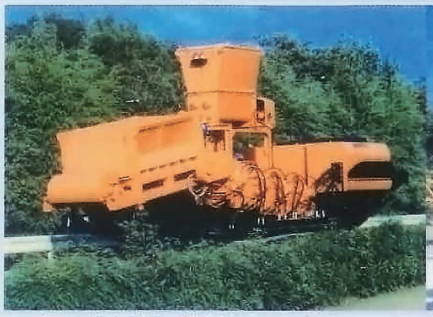
process A

stabiliser
Mixes the ground up to 50cm from the surface

disperser
Disperses and spreads the purification liquid

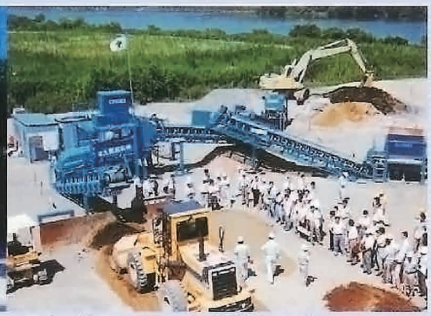
mixing fork
Removes the rocks in the soil before application and mixes the soil and the purification liquid after application

process C



automatic small all purpose ground quality improving machine (front)
MR126 processing amount : 150m^2/day

(back)



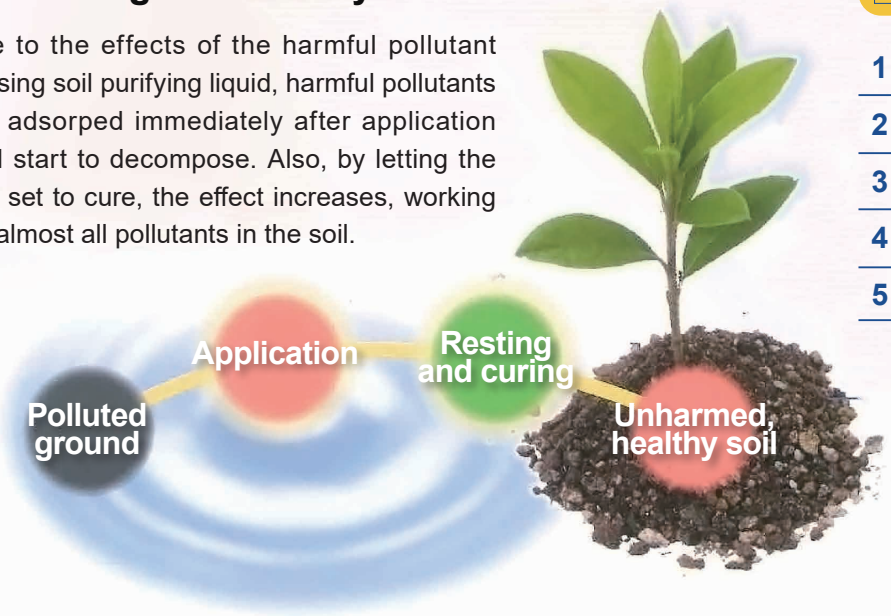
big assembly type all purpose ground quality improving machine
Processing amount : 500m^2/day

Mixes and purifies the liquid with soil brought up into the hopper by a power shovel.

Mechanism of the purification

adsorps and decomposes the pollutants in a short period of 1 to 2 months after processing for a healthy soil.

due to the effects of the harmful pollutant erasing soil purifying liquid, harmful pollutants get adsorped immediately after application and start to decompose. Also, by letting the soil set to cure, the effect increases, working on almost all pollutants in the soil.



Approximate time of rest needed for the soil

1	organic compounds (simple substance pollution)	3 to 4 weeks
2	organic compounds (composite pollution)	5 to 6 weeks
3	heavy metals (simple substance pollution)	5 to 6 weeks
4	heavy metals (composite pollution)	8 to 10 weeks
5	oil pollution	2 to 4 months

Examples of processing

Pollutant	Pollution concentration		State of the scene	Resting time	Amount processed
	before processing	after processing			
TEC PCE TCE	2mg/L 0.53mg/L 0.0022mg/L 11mg/kg	0.003mg/L 0.002mg/L <0.0005mg/L <0.003mg/kg	Base of a mountain Inside the prefecture of yamanashi	4 weeks	100 m³
Oils	O..5WT% 18%	0.1WT% 1.60%	GS site Factory site	6 weeks	200 m³
oils	13% 15%	0.010% 0.120%	Processing Centre for disposed oil Factory site	6 weeks	2,000 m³
CN	9.3mg/L 394mg/kg	0.04mg/L 34mg/kg	Inside the city of Yokohama Otoba town	6 weeks	360 m³
TCE PCE Cisl-2DCE	<1.224mg/L <3.296mg/L <0.089mg/L	<0.004mg/L 0.003mg/L 0.0mg/L	In the prefecture of Tokyo Residential area Shibuya ward	6 weeks	4,000 m³
PCE Benzen PCE	4.6vol ppm 2.3 vol ppm 0.5 mg/L	<0.01 vol ppm <0.01 vol ppm <0.001 mg/L	Inside the prefecture of Shiga Inside the city of Hikone Factory site	6 weeks	1,500 m³
Pb	0.14mg/L	<0.001mg/L	factory site	6 weeks	3,000 m³
DXN	17,000pg-TEQ/g 4,500pg-TEQ/g 3,600pg-TEQ/g 8,600pg-TEQ/g	1,800pg-TEQ/g 19pg-TEQ/g 0pg-TEQ/L Drainage	Yokosuga	6 weeks	1,500 m³
DXN	13,000pg-TEQ/g	0.0057pg-TEQ/L 0.0054pg-TEQ/L	Cleaning center	5 weeks	100 m³
DXN	6-10ng-TEQ/g	16pg-TEQ/L 160pg-TEQ/L 0.55ng-TEQ/g	Furnace dismantling works	6 weeks	130 m³
DXN	1,500,000pg TEQHRGS/L	320pg TEQHRGS/L	Cleaning center	5 weeks	200 m³

Results of the PCB test

	Pollution concentration		State of the scene	Resting time
	before processing	after processing		
1	100mg/L	0.145mg/L 0.0025mg/L <0.0005mg/L <0.0005mg/L	Factory site	3 days 7 days 3 weeks 4 weeks
2	1.5mg/kg	0.2mg/kg	Factory site	6 weeks
3	0.0022mg/L	<0.0005mg/L	Factory site	6 weeks
4	8.3mb/kg	0.05mg/kgg <0.0005mg/L	Inside a factory site	6 weeks
5	19%	<0.0003mg/L 5mg/kg	Government office	6 weeks
6	0.020mg/L 280mg/kg	<0.0005mg/L 120mg/kg	Owned property	6 weeks
7	15mg/kg	Less than 1.5mg/kg 0.1mg/kg	Inside a factory site	4 weeks 6 weeks
8	0.039mg/L	<0.0005mg/L	Inside the prefecture of toyama	6 weeks

Organic compound tests and Results of application

Pollutant	Pollution concentration		State of the scene	Resting time
	before processing	after processing		
TEC	0.53mg/L 11mg/kg	0.002mg/L 0.003mg/kg	Base of mountain	2 weeks
Nitric acid pitch (Disposed oils)	Ph 1.5 Oil content 7% Tar content 30%	Ph6.6 <0.1% 0.20%	Object of a public works office at the foot of the fuji mountain	6 weeks
TCE PCE Cisl-2DCE	<1.224mg/L <3.296mg/L <0.089mg/L	<0.004mg/L <0003mg/L <0.009mg/L	Residential area in shibuya ward, Tokyo	6 weeks
PCE Benzen PCE	4.6vol ppm 2.3vol ppm 0.5mg/L	<0.01vol ppm <0.01vol ppm <0.001mg/L	Factory site inside hikone city, shiga	6 weeks
TCE	2.8mg/L	0.005mg/L	Municipal land	6 weeks
Application on Oil pollution	13% 14% 15% 14%	0.07% 0.04% 0.70% 0.05%	Inside yokohama city	5 weeks
Major company of Petroleum Oil pollution	21,700mg/kg <20mg/kg 12,900mg/kg 10,100mg/kg	4,063mg/kg <20mg/kg 2,100mg/kg 1,963mg/kg		4 months
TCB1.2.4.5 Tetrachlorobenzene TCB1.2.3.4 Tetrachlorobenzene	500mg/L 490mg/L	150mg/L 200mg/L		28 days 56 days 28 days 56 days

Results of the dioxin tests

	Pollution concentration		State of the scene	Resting time
	before processing	after processing		
1	2,100pg-TEQ/g	180pg-TEQ/g 23pg-TEQ/g	Cleaning center	3 weeks 6 weeks
2	1,400pg-TEQ/g	26pg-TEQ/g		6 weeks
3	13,000pg-TEQ/L	0.0057pg-TEQ/L 0.0054pg-TEQ/L	Cleaning center	5 weeks
4	1,900pg/g 51pg-TEQ/g	620pg/g 7.9pg-TEQ/g	Electricity company Cyclone ashes	3 weeks
5	66ng-TEQ/g	2.8ng-TEQ/g	Electricity company	4 weeks
6	130pg-TEQ/g	38pg-TEQ/g		3 weeks
7	8,060pg-TEQ/g	144.8pg-TEQ/g	Beauty center	3 weeks
8	65ng-TEQ/g Second process 4.4ng-TEQ/g	4.4ng-TEQ/g 0.5ng-TEQ/g	Cleaning center	6 weeks 8 weeks
9	580pg-TEQ/g	120pg-TEQ/g	Tago no ura port Port management office	6 weeks
10	1,200pg-TEQ/g	140pg-TEQ/g	Factory site	6 weeks
11	5,100pg-TEQ/g	64pg-TEQ/g	Super general contractor	6 weeks
12	6.4ng-TEQ/g	0.54ng-TEQ/g	Left over ashes from incineration	4 weeks

The environmental regulations on harmful compounds in Japan

	secondary elution standard (mg/L)	Soil environment standard (mg/L)	Soil containing standard (mg/kg)
specific harmful substance type 1 volatile organic compounds			
(1) carbon tetrachloride	0.02	0.002	
(2) 1,2 dichloroethane	0.04	0.004	
(3) 1,1 dichloroethylene	0.2	0.02	
(4) cis 1.2 dichloroethylene	0.4	0.04	
(5) 1.3 dichloropropane	0.02	0.002	
(6) dichloromethane	0.2	0.02	
(7) tetrachloroethylene	0.1	0.01	
(8) 1.1.1 trichloroethane	3.0	1.0	
(9) 1.1.2 trichloroethane	0.06	0.006	
(10) trichloroethylene	0.3	0.03	
(11) benzene	0.1	0.01	
specific harmful substance type 2 heavy metals			
(1) cadmium and its chemical compounds	0.3	0.01	150 agricultural land : 1mg/kg for every kg of rice
(2) hexavalent chromium	1.5	0.05	250
(3) cyanide	1.0	mustn't be detected	50
(4) mercury and its chemical compounds	0.005	0.0005	15
(5) alkyl mercury compounds	undetected	mustn't be detected	15
(6) selenium and its compounds	0.3	0.01	150
(7) lead and its chemical compounds	0.3	0.01	150
(8) arsenic and its chemical compounds	0.3	0.01	150 agricultural land : 15mg/kg for every kg of soil
(9) fluorine and its chemical compounds	24.0	0.8	4,000
(10) boron and its chemical compounds	30.0	1.0	4,000
specific harmful substance type 3 pesticides			
(1) Simazine	0.03	0.003	
(2) thiram	0.06	0.006	
(3) thiobencarb	0.2	0.02	
(4) PCB	0.003	mustn't be detected	
(5) organophosphorus compounds *	1.0	mustn't be detected	
(6) all types of nitrogen	120.0	12.0	
(7) all types of phosphorus	16.0	1.6	

* organophosphorus refers to parathion, methyl parathion, methyl dimedone and EPN

others			
Phenols	5.0	0.05	
Copper	3.0		agricultural land : for fields, 125 mg/kg for every kg of soil
Zinc	5.0	0.5	
Soluble iron	10.0	0.5	
Soluble manganese	10.0	1.0	
Chromium	2.0	0.2	
Dioxins	(quality of water) 1.0pg-TEQ/L (dust ashes from incineration) 3000pg-TEQ/g (sediment underwater) 150pg-TEQ/g	(soil) 1000pg-TEQ/g (Air) 0.6pg-TEQ/m3	

contacts