

**Envirosource Leachate Treatment Process (LTP) - Enviroammanox® Process**  
*a breakthrough in ecofriendly totally biological process for leachate treatment*

Leachate is a very strong wastewater that results from compressing wastes, typically municipal solid wastes (MSW) in collection trucks or landfills. For landfills, leachate formation is also due to percolation of rainwater through layers of deposited MSW, carrying with it acids and other chemicals dissolved from materials in the putrefying garbage. Due to anaerobic regions in a landfill, leachate is generally very high in organics (COD about 5,000 to >20,000 mg/L) and ammonia (up to about 2,000 mg/L). The leachate organics are high in recalcitrants, such as humic acids, complex acids, coloured matters, etc. Due to presence of recalcitrants, it is difficult to biologically remove those organics via the conventional types of processes, in order to meet legal discharge standards

The Envirosource Leachate Treatment Enviroammanox® Process employs a process configuration that maximizes breakdown of recalcitrant organics that impart the dark colour to leachate, and ensures enrichment of effective acclimatized microorganisms with no short circuiting. The EMM-MBBR Enviroammanox® Process is rich in biopolymers for adsorption of recalcitrant organics, and harbours Nitrifiers for ammonia removal.



Envirosource first Landfill closure project (1998): black leachate flowing from a closed landfill on a dry day into a holding pond.

Enviroammanox LTP at Ampang - Hulu Langat Bt.14, for MPAJ, Selangor, Malaysia (1998)

LTPs are designed to comply to the Emission limit for Leachate Treatment Plants, in the Malaysian Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009, or EQ(CoP SWTS &LF) R 2009

Parameter	Unit	Standard	Parameter	Unit	Standard
(i) Temperature	°C	40	(xvi) Nickel	mg/L	0.20
(ii) pH Value	-	6.0-9.0	(xvii) Tin	mg/L	0.20
(iii) BOD5 at 20oC	mg/L	20	(xviii) Zinc	mg/L	2.0
(iv) COD	mg/L	400	(xix) Boron	mg/L	1.0
(v) Suspended Solids	mg/L	50	(xx) Iron	mg/L	5.0
(vi) Ammoniacal Nitrogen	mg/L	5	(xxi) Silver	mg/L	0.10
(vii) Mercury	mg/L	0.005	(xxii) Selenium	mg/L	0.02
(viii) Cadmium	mg/L	0.01	(xxiii) Barium	mg/L	1.0
(ix) Chromium, Hexavalent	mg/L	0.05	(xxiv) Fluoride	mg/L	2.0
(x) Chromium, Trivalent	mg/L	0.20	(xxv) Formaldehyde	mg/L	1.0
(xi) Arsenic	mg/L	0.05	(xxvi) Phenol	mg/L	0.001
(xii) Cyanide	mg/L	0.05	(xxvii) Sulphide	mg/L	0.50
(xiii) Lead	mg/L	0.10	(xxviii) Oil & Grease	mg/L	5.0
(xiv) Copper	mg/L	0.20	(xxix) Colour	ADMI*	100
(xv) Manganese	mg/L	0.20			

\*ADMI- American Dye Manufacturers Institute

Envirosource has developed the Enviroammanox® process that employs its proprietary EMM media as carriers for sensitive bacteria, thus promoting growth of sensitive nitrifiers and denitrifiers and organic degraders that enable biological decolourisation.



Dark leachate biologically decolourised without any chemical usage at Bentong LTP

**Examples of Enviroammanox Leachate Treatment Plants (LTPs):**



Enviroammanox LTP at Bentong, Pahang, for JPSPN Malaysia (2015) with EMM media for ammonia removal and biological decolourisation.

Enviroammanox LTP at Langkawi, Kedah for JPSPN/Zeta (2018) with EMM media for ammonia removal and biological decolourisation.

Enviroammanox LTP at Simpang Renggam, Johor, for JPSPN/Zeta (2019) with EMM media for ammonia removal and biological decolourisation.

For further info on Enviroammanox® Leachate Treatment Process, please email: [technical@envirosourcesb.com](mailto:technical@envirosourcesb.com)