RIVER, LAKE, MARSH, WETLAND REMEDIATION & ALGAE CONTROL UTILIZING ENVIRONMENTAL BALANCE DEVICE (EBD) TECHNOLOGY

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1) ENVIRONMENTAL BALANCE DEVICE (EBD) SYSTEM BENEFITS IN RIVER, LAKE, WETLANDS REMEDIATION

A) EBD Systems remediate rivers, lakes, wetlands and other bodies of water without using any of the costly conventional remediation methods which typically employ chemicals, filtration, retention ponds, dredging schemes, phytoremediation (plants), oxidation, non-indigenous bacteria etc.

B) Effective ongoing EBD remediation is achieved on a 24 hour a day, 7 days a week basis for over 15 years even while pollutants continue to be discharged and introduced into the water body.

C) EBD effectively remediates organic as well as inorganic pollutants (including heavy metals and PCBs) on an ongoing, continuous and permanent basis.

D) EBD is sustainable, permanent, long lasting, non-intrusive and costs only a fraction of what conventional remediation technologies and methods cost.

E) EBD river / lake remediation is effective regardless of the rivers or lakes flow rate, depth, width or size to be remediated and maintained. .

F) EBD wetland and marshland remediation is effective regardless of the size of the area to be remediated and maintained.

G) EBD is also effective in eliminating and preventing toxic-green-algae growth.

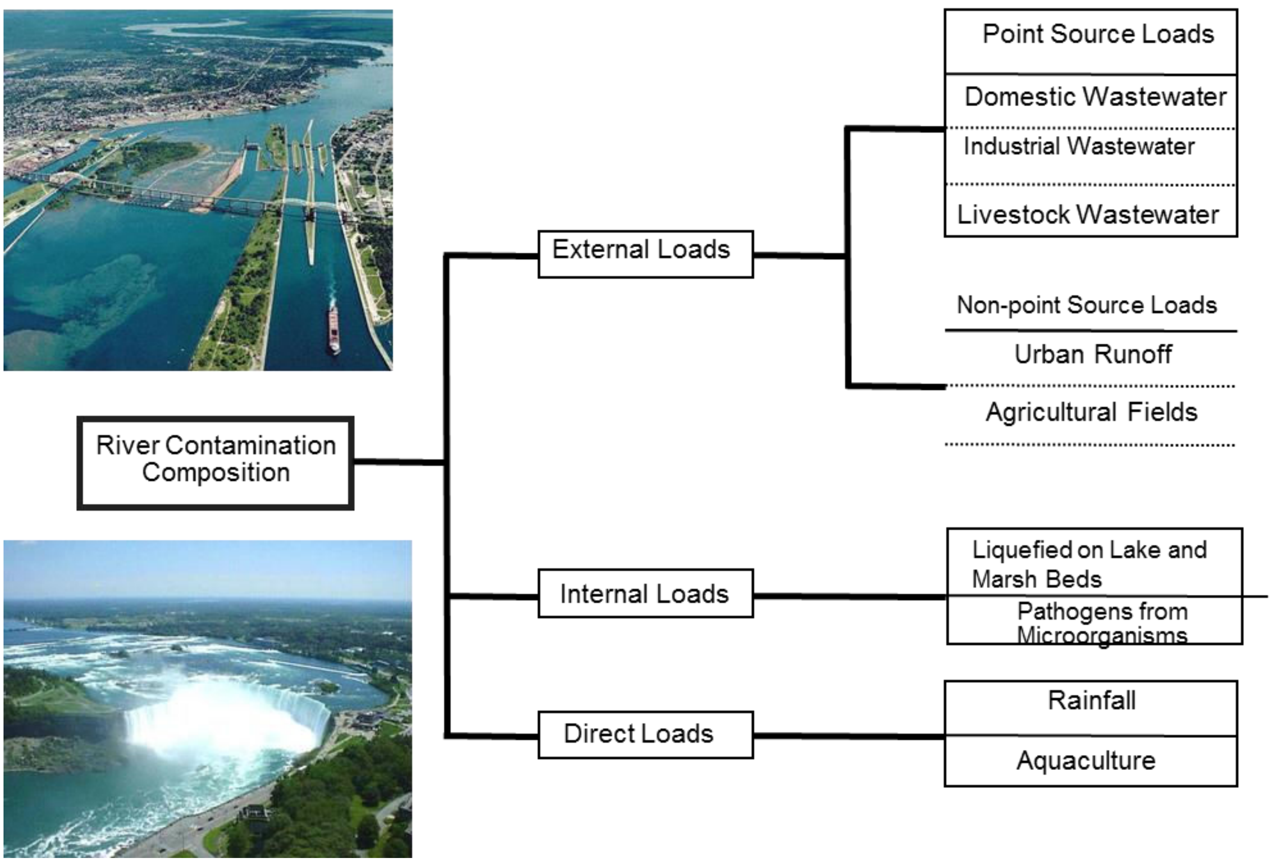
2) EBD TECHNICAL SUMMARY FOR RIVER AND LAKE REMEDIATION APPLICATIONS (Short Version)

All matter on Earth contains positive and negative energy particles. Rivers and lakes and their respective sediments containing organic and inorganic pollutants such as man-made chemicals, raw sewage, heavy metals etc., contain excessive levels of Negative Energy Particles (NEP-), and lack sufficient levels of Positive Energy Particles (PEP+). Excessive NEP- volumes in the water and lake/river beds create radical “Reactive Oxygen Species” (ROS) which are oxidizers and most destructive to indigenous microorganisms DNA. Healthy indigenous microbial life is critical in order for nature to be able to effectively remediate its own polluted ecosystems. EBD units attract positive energy particles (PEP+) which are naturally present in the ecosystem. By creating an energy particle balance between NEP- and PEP+ levels, ROS levels are greatly reduced providing indigenous microorganisms with non-oxidizing healthy oxygen and ability to quickly replicate with healthy DNA. In addition, EBD systems cause all atomic frequencies of all matter situated above, below and around the EBD river or lake installation, to reach excited states thus causing all natural and indigenous microorganisms present within the EBD balanced perimeter to become much more active and much more prolific. By naturally optimizing the atomic excited states and frequencies in matter and optimizing healthy indigenous microbial life in the ecosystem located within the EBD treated perimeter, EBD systems reliably provide the numerous benefits listed in Section 1 above, in an environmentally sustainable and much more affordable way.

3) WATER CONTAMINATION AND ENVIRONMENTAL IMPACT

The majority of river, lake, wetland, ocean and ground water contamination present in the world today results from human activity. The primary sources of pollution are as follows:

A) Surface water contamination and deterioration caused by human activity.
B) Ground water, river, lake, and wetland contamination caused by numerous industrial practices.
C) Illegal dumping and raw sewage.
D) Ocean contamination is caused by crude oil spills, acidic rain, ship bilge water discharge, rain and snow precipitation containing pollutants as well as agricultural runoff into ground water, rivers, lakes, sediments, and wetlands.



Such contamination can be classified into the following three main categories 1) external load, 2) internal load, and 3) direct load. In addition, the external load can be further classified as a point source load and a non-point source load.

- **External Loads** are caused through river inflows and side-flows.

Point Source Loads – are comprised of specific contaminmats such as residential wastewater, industrial and manufacturing facility wastewater, sewage treatment facilities and livestock facilities to name a few.

Non-point Source Loads – they help to diffuse contamination that does not originate from a single specified source such as industrial wastewater, and/or domestic wastewater. They are the cumulative effects of small amounts of contaminates accumulating from wide areas such as agricultural land, urban areas, etc.

- **Internal Loads –** Contaminates are liquefied from the bottom of the lakes and wetlands and/or produced by non-beneficial microorganisms as opposed to beneficial microorganisms.

- **Direct Loads –** Rainfall and/or agricultural activity have a direct impact on the water quality of lakes and wetlands. Groundwater flowing into lakes and marshes is included in direct load.

4) CONTAMINANT TYPES AND IMPACT

A) Residential Wastewater

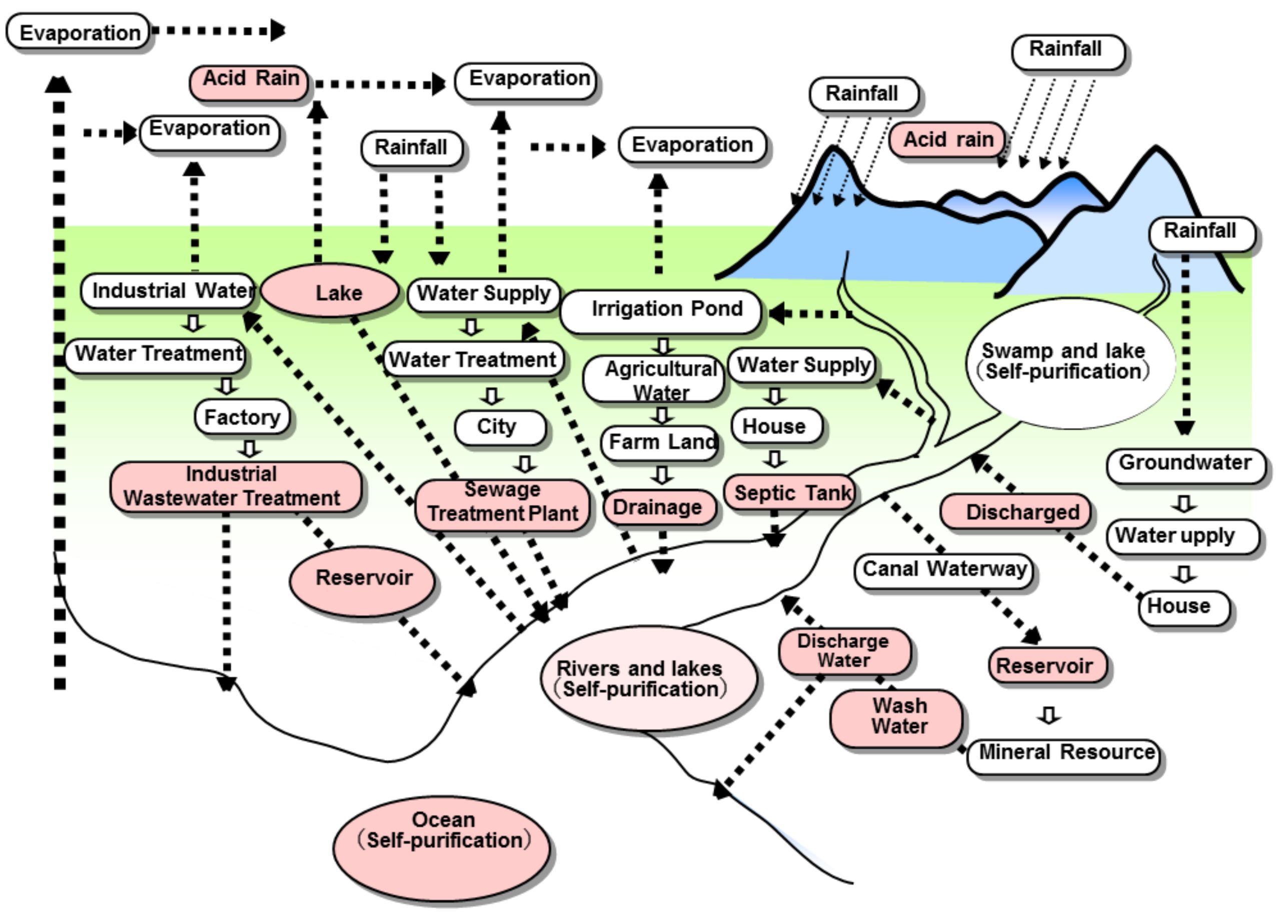
In developed countries, domestic & residential wastewater containing chemical substances such as human excrement, synthetic detergents, edible cooking oils, kitchen, bath, and laundry wastewater, insecticides and termite control agents, are treated in sewage treatment facilities and then discharged into rivers and oceans. In developing nations however, there are numerous areas where infrastructure is lacking and domestic wastewater is discharged into rivers and oceans without pretreatment.

Organic substances discharged into rivers, decompose through chemical reactions and/or biodegradation. As these substances are degraded through microbial activity, they are converted into an energy source for microorganisms and are thereby converted into non-toxic substances such as of oxygen and carbon dioxide.

During the biodegradation process, high volumes of dissolved oxygen are consumed in water. Dissolved oxygen is consumed by microorganisms, aquatic insects, fish, and other living organisms. Oxygen depletion occurs when excessive amounts of dissolved oxygen are consumed in water and if too much oxygen depletion occurs, microorganisms are unable to adequately biodegrade the contamination. It is, therefore, important to analyze and measure the amount of dissolved oxygen (DO mg/L) in water.

Generally speaking, when organic pollutants are decomposed by microorganisms, 90% of the decomposition will take 12 to14 days of incubation at 68° Fahrenheit (20°C).

Approximately 70% of organic substances decompose within 5 days of incubation. This is why the Biochemical Oxygen Demand (BOD) value is often used as a robust surrogate to measure the degree of organic pollution present in water. In those cases, where water contains excessive amounts of organic pollutants, effective decomposition through biodegradation is limited and putrefaction through chemical reactions ensues. Water putrefaction produces foul odors as well as toxic substances which destroy numerous living organisms present in rivers, lakes and wetlands. The type and ratio of organic contaminants flowing into rivers is, on average, estimated to consist of domestic wastewater (70%) and livestock wastewater (30%). These contaminant concentrations have increased over and above those originating from industrial wastewater.



B) Industrial Wastewater and Mining Runoff

It is estimated that river, lake and wetland contamination is caused by 400 to 500 different kinds of chemical pollutants introduced into the environment though numerous manufacturing processes. Some of these chemical pollutants include, but are not limited to, polyvinyl chloride, asbestos and trichloroethylene etc. Even "clean" tap water originating from polluted water having been processed in water treatment plants, still contains over 200 kinds of residual substances. Of these, over 20 different types of residual substances are carcinogenic.

Industrial wastewater from mid to large scale manufacturing plants are normally regulated by local government depending on the water discharge volumes as well as the locations and distances between factories and rivers.

Heavy metals, agricultural chemicals and toxic agents are hazardous pollutants. Heavy metal contamination is caused by mining and/or industrial wastewater containing cadmium, mercury, copper and lead to name a few. Such wastewater flowing into lakes and wetlands cause harmful oxidation. Even in those cases where the concentrations of such hazardous substances are low, they are nevertheless absorbed by a myriad of different aquatic organisms, accumulating in their bodies over time and dispersing over wide areas.

Organochlorinated and dangerous hydrocarbon compounds include pesticides DDT, DDD, BHC, transformer oils such as PCB, and benzene derivatives such as ABS to name a few. These pollutants cause dangerous synthetic compound contamination given their low degradability when compared to organic substances and considering that their respective concentrations accumulate over time.

Acid and alkali contamination results from industrial and mining wastewater discharge/runoff. Lake and wetland acidification caused by acid rain, has been detected in North America and Canada since 1950 and has become a very serious issue. The primary contributing factor for acid rain is soot and smoke from manufacturing plants as well as vehicle exhaust emissions containing sulfur oxide (SO_x) and nitrogen oxide (NO_x).

Wastewater contains various contaminants such as pharmaceuticals, phosphates, nitrates, coliforms, heavy metals, insecticides, herbicides, food waste and other oxygen-demanding compounds which have led to serious problems for agricultural products, dams, and public facilities. In addition, trace metal absorption is a serious public health issue.

Polluted water flowing from abandoned mining operations contain pollutants including, but not limited to heavy metals, cyanide, and sulfuric acid. When it rains, these pollutants can flow into rivers, lakes and wetlands which provide water for agricultural irrigation. Crops are then contaminated in the fields and thereafter consumed by humans and farm animals alike.

C) Agricultural Runoff Wastewater

It is a common worldwide practice to use the following chemicals and products in agricultural applications: insecticides, disinfectants, herbicides, chemical and organic fertilizers, hormone based drugs and livestock excrement. This leads to eutrophication and resultant water-body contamination. Applying excessive amounts of phosphate and nitrate nitrogen based fertilizers is also widespread and this also leads to river, lake, wetland eutrophication and groundwater contamination not to mention that high levels are also absorbed by crop leaves, roots and tubers.

5. CONVENTIONAL RIVER & LAKE REMEDIATION TECHNIQUES AND METHODS

River contaminates can be gradually remediated naturally by aquatic organisms such as bacteria and/or amoebas. This method is known as the self-purification process. If excessive amounts of contaminants are present however, the self-purification process is limited and river contamination concentrations increase. To alleviate this problem, some of the following river remediation processes are often employed:

A) River Remediation Utilizing Riffles and River Pool

In a flowing stream, a riffle-pool sequence (also known as a pool-riffle sequence) develops as a stream's hydrological flow structure alternates from relatively shallow areas to deeper water areas. Riffles are formed in shallow areas by coarser materials such as gravel deposits over which water flows. Meandering streams with relatively coarse bed load, tend to develop a riffle-pool sequence with pools located on the outer stream bends and riffles develop in the crossovers between one meander and the next on the opposite sides of the stream.

B) Bio-Active Contact Oxidation Method

This method involves self-purification functions using large water tanks with beds containing stones which are usually 15 cm in diameter where microorganisms are naturally present on the stone surfaces. River water is remediated as it flows over and in between the stones.

C) Thin Layer Stream Method

This method aims to absorb and decompose contaminants by arranging for the water to come into contact with microorganism laden small stones placed on the bottom of the thin layer stream of the river. Weirs are placed upstream and air is pumped/supplied in between the weir areas in order to increase microbial activity.

D) Direct Catalytic Oxidation Method

A steel frame containing suspended contact materials, is positioned on the river bed and river water flows through the frame. Contaminants in the water are absorbed and decomposed by microorganisms present on the contact material surfaces.

E) Upstream Catalytic Oxidation Method

Treatment tanks are filled with plastic contact materials containing microorganisms on their surfaces. Contaminated water is injected from the bottom to the top of the tank.

CONVENTIONAL REMEDIATION METHODS FOR RIVERS, LAKES, MARSHES AND WATERSHEDS

- Countermeasures for Rivers
  - Direct Treatment
    - Precipitation
    - Filtration
    - Contact Oxidation Method
    - Soil Treatment Method
    - Vegetation Treatment Method
  - Countermeasure for sludge/ mud
    - Sediment Dredging
  - Oxygen Supply
    - Oxygen Supply Method
  - Other
    - Electrochemical Treatment

- Countermeasures for Lakes & Marshes
  - Dilution
    - Dilution
  - Direct Treatment
    - Precipitation
    - Filtration
    - Contact Oxidation Method
    - Vegetation Treatment Method
  - Vegetation Use
    - Vegetation Method
  - Flow Control
    - Flow Control Method
  - Oxygen Supply
    - Oxygen Supply Method
  - Countermeasure for sludge / mud
    - Sediment Dredging
    - Sediment Film
  - Direct Recovery
    - Algae Collection
  - Other
    - Ecosystem Control
    - Chemical Dispersion
    - Electrochemical Treatment
    - Sunlight Cover

- Countermeasures for Watersheds
  - Countermeasure for Point Source Loads
    - Countermeasure for Domestic Wastewater
    - Countermeasure for Livestock Drainage
    - Countermeasure for Industrial Wastewater
    - Countermeasure for Fish Farming
  - Countermeasure for Surface Source loads
    - Countermeasure for Agriculture
    - Countermeasure for Urban Areas
    - Countermeasure for Forests

F) Vegetation Purification Method

Contaminated water is diverted to containment areas containing nitrogen and phosphorous absorbing plants.

The hydroponic culture method is also employed for water decontamination using plants such as dropwort etc.

G) Soil Percolation Method

This method filters and eliminates contaminants by directing the water to flow through soil, gravel and sand.

H) Degrading Bottom Sludge Method

The accumulation of contaminated substances such as nutritive salts on river and/or lake beds, leads to nitrogen and phosphorus contamination. Dredging operations are carried out to remove the sludge layer on the upper layers of sediment.

I) Contact Oxidation Method

This method employs treatment tanks filled with microorganism laden plastic contact materials.

F) Complex method (Sand Filtration +)

A cage mat is effectively arranged along the shallow riffle of the river and river water gradually flows into the sand bank area. Water head gaps occur between the main stream and sandbank stream of the river. Water is filtered by the cage mat and then the water flows back into the main stream.

6. WATER QUALITY STANDARD VALUES

A) Potential of hydrogen (pH)

It is an important parameter to analyze water acidity and alkalinity

Type of Water	pH Standard
Environmental standard	6.5～8.5
Effluent water	5.8～8.6
Tap water	5.8～8.6
Suitable pH value of water	7.5

B) COD (Chemical Oxygen Demand)

The chemical oxygen demand (COD) test is commonly employed to indirectly measure the amount of organic compounds in water. Most COD applications measure the amount of oxidizable organic pollutants found in surface water (e.g. lakes and rivers) or wastewater, making COD a useful measure of water quality. Generally, the low COD value is not related to the value of Suspended Solids (SS). However, when the SS value increases, the COD value also increases. This is due to the many types of SS that have originated from dissolved organic substances.

Types of Water and Environmental Factors	COD Standard
Pure water free of contaminants	0mg/l
Pure mountain stream	1mg/l and below
Rain water	1mg/l～2mg/l
Slightly contaminated water from fallen leaves and water grass decomposition slightly raises COD to approximately 1~5mg/l (excluding domestic and industrial wastewater).	2mg/l～5mg/l
Downstream of rivers	2mg/l～10mg/l
Various fish species can thrive.	3mg/l and below
Some types of contamination resistant fish can thrive	5mg/l and below
Sewage and contaminated water	10mg/l and below
Environmental standard for water quality	1mg/l～3mg/l
Current effluent standard	160mg/l and below

C) BOD (Biochemical Oxygen Demand)

Biochemical oxygen demand (BOD) is the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period. Following is a general international index reflecting organic contaminates in water.

Water Quality	Type of Water	BOD
AA	First grade tap water	1mg/L and below
A	Second grade tap water	2mg/L and below
A	First grade aquaculture water	2mg/L and below
B	Third grade tap water	3mg/L and below
B	Second grade aquaculture water	3mg/L and below
C	Third grade aquaculture water	5mg/L and below
C	First grade industrial water	5mg/L and below
D	Second grade industrial water	8mg/L and below
D	Agricultural water	8mg/L and below
E	Second grade industrial water	10mg/L and below

D) Cl (Chloride Ion)

The level of chloride ions present in river water, is generally related to the level of contamination present in surrounding densely populated areas.

Water Type	Chloride Ion Concentrations
Upstream of rivers	2mg/l～4mg/l
Downstream of rivers	10mg/l～50mg/l
Sea water	50mg/l～18,000mg/l
Tap water	200mg/l and below:

E) SS (Suspended Solids)

SS is also known as suspended substances, floatables and suspended solid substances. Suspended solids refer to small solid particles which remain in suspension in water as a colloid or due to water motion. SS is primarily composed of small clay particles. However, it also contains organic substances originating from domestic and industrial wastewater. It is used as one indicator of water quality. As SS increases, photosynthetic processes are reduced. In addition, suspended substances/solids clog fish gills thereby endangering their very existence and it also has a very detrimental effect on coral.

Water quality standard depending on use	SS Standards
Tap water from treated river sources	25mg/l and below
Lake and wetlands	5mg/l and below
Current effluent standard	200 mg/l (average 150 mg/l per day)

F) NH_4^+-N (Ammonia Nitrogen)

A significant amount of ammonia nitrogen is produced in water during the purification and decomposition process of protein and/or organic nitrogen compounds from sewage, human waste, and industrial wastewater. Normally clean water containing sufficient oxygen contains more nitrate nitrogen whilst effluent contaminated water contains organic nitrogen and/or ammonia nitrogen.

Water Type	Ammonia Nitrogen Standard
Upstream of rivers and/or water springs	0.05mg/l
Rain water	0.10mg/l～0.40mg/l
Downstream of rivers	0.40mg/l～5.00mg/l
Sewage	5.00mg/l

G) NO_2^- (Nitrite nitrogen)

Nitrite nitrogen is indicated in nitrite by calculating its nitrogen amount. Nitrite nitrogen occurs during the oxidation process of the ammonia nitrogen present in the various types of wastewater from manufacturing plants, fertilizers, human waste and sewage. Thus, it is a very important index to estimate the contamination level of water.

Water Type	NO_2^- (Nitrite nitrogen) Standards
Upstream of rivers	0.006mg/l～0.10mg/l
Clean water	0.02mg/l
Slightly contaminated water	0.02mg/l～0.10mg/l
Contaminated water	0.10mg/l～0.20mg/l
Extremely contaminated water	0.20mg/l～0.50mg/l
Downstream of rivers	0.30mg/l
Waste water	0.50mg/l

H) NO_3^- (Nitrate Nitrogen)

Nitrate nitrogen is produced by the oxidation of ammonia ions and nitrite ions and it can exist in stable form when oxygen is sufficiently dissolved in water. Nitrogen compounds in clean water sources such as upstream, groundwater and/or water springs is basically present in nitrate nitrogen form. Regarding the environmental standard for tap water standards, total values of nitrate and nitrite nitrogen should be below 10 mg/l.

Water Type	NO_2^- (Nitrite nitrogen) Standards
Rain water	0.2mg/l～0.4mg/l
Upstream of rivers	0.2mg/l～1.0mg/l
Downstream of rivers	2.0mg/l～6.0mg/l
Groundwater and spring water	2.0mg/l～10.0mg/l

I) T-K-N (Total Kjeldahl Nitrogen)

Total Kjeldahl Nitrogen is a critical method calculated by adding the amounts of organic-nitrogen, ammonia (NH_3), ammomium (NH_4^+) nitrogen.

J) DO (Dissolved Oxygen)

Dissolved oxygen is the amount of oxygen dissolved in water. It mainly indicates the amount of water pollution present from organic matter and usually, the higher the amount of DO, the better. At 2mg/L concentrations or below, foul odors are generated and the environment does not support fish propagation.

K) PO_4^{3-} (Phosphate)

Phosphate is an element of phosphorus which is formed from phosphoric acid. Phosphate ions are contained in various commodities such as fertilizers, synthetic detergents and foodstuff. The higher the phosphate concentration, the higher the risk of eutrophication. Eutrophication is the primary cause of red tide – algae blooms.

Water Type	PO_4^{3-} (Phosphate) Standards
Upstream of rivers	0.005mg/l～0.001mg/l
Downstream of rivers	0.003mg/l～0.04mg/l

L) Chlorophyll A

Chlorophyll A, is a specific form of chlorophyll used in oxygenic photosynthesis – present in plants. The presence of phytoplankton (algae) can be calculated by measuring "chlorophyll A" concentrations in water.

M) Heavy Metals

A) Cadmium and Cadmium Compounds [0.01mg/l or below]

Mining wastewater, industrial effluent water and sludge discharged from sewage treatment plants, often contain cadmium and cadmium compounds which have a high likelihood of being released into rivers. As for cadmium toxicity, it is a accumulative toxic substance which causes renal failure and osteopathy after repeated ingestion over extended periods of time.

B) Mercury and Mercury Compounds [0.0005mg/l or below]

Mercury and mercury compounds are sometimes present in industrial wastewater, agricultural chemicals, sewage and in the atmosphere and these pollutants are released into rivers. Generally, mercury is classified as inorganic mercury and organic mercury (alkyl mercury). Its chronic toxicity causes many health problems due to its acute toxicity. In particular, organic mercury which accumulates in the human body, causes severe functional disorders to nerve cells.

C) Selenium and Selenium Compounds [0.01mg/l or below]

Selenium is sometimes naturally present in water. Selenium and selenium compounds however, are usually present in mining wastewater and industrial effluent water which is released into rivers. Liver and gastrointestinal disorders tend to develop as they accumulate over time in the human body.

D) Lead and Lead Compounds [0.01mg/l or below]

Lead and Lead Compounds are often contained in geological formations, industrial and mining effluent water. Lead can also be present in tap water if any sections of the piping between the water treatment plant and the residential or commercial water faucets are made out of lead. In addition, these contaminants are also present in industrial commodity additives and impurities and are widely distributed into the environment. Anemia and neural disorders tend to develop as they accumulate over time in a human body.

E) Arsenic and Arsenic Compounds [0.01mg/l or below]

Arsenic is naturally present in nature. Arsenic exposure is derived from the atmosphere, water, and food. In most cases, these contaminants enter the human body by food ingestion and tend to cause poisoning over time developing both acute and chronic symptoms.

F) Hexavalent Chromium Compounds [0.05mg/l or below]

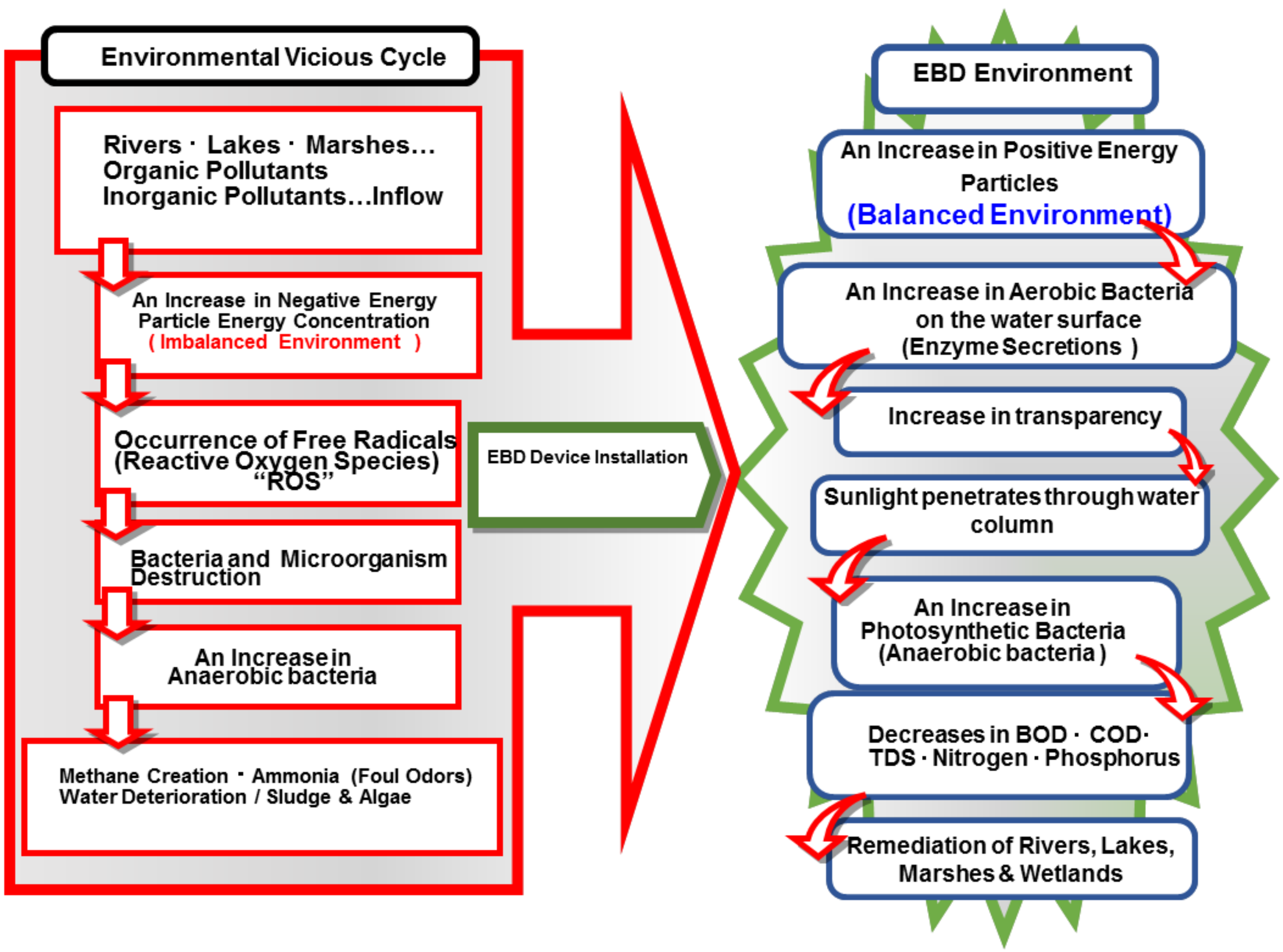
Generally speaking, hexavalent chromium is not naturally present in nature but does emanate from mining and industrial effluent water and this leads to serious public health problems. Hexavalent chromium has higher toxicity than total chromium. It is well known that direct contact with hexavalent chromium through skin or by inhalation, causes human cell damage leading to lung cancer and other serious diseases.

7. WHY EBD IS NECESSARY

Various conventional river remediation methods have been described in Section 5 above, and some of them have proven '*temporarily*' successful. River and wetland contamination however, has been spreading at alarming rates worldwide mainly due to expanding urbanization and *heavy pesticide/herbicide/insecticide use* in modern farming practices. To a large degree, rapid population growth in urban areas has led to an increase in the volume of domestic wastewater discharge and the rapid expansion of industrial activity has led to significant increases in industrial effluent water discharge.

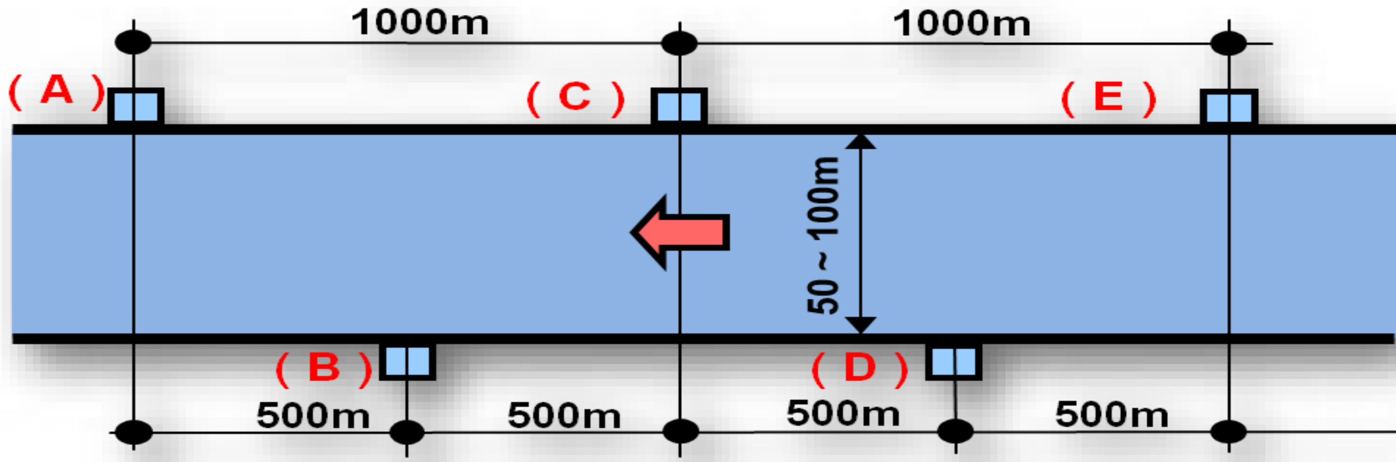
Most existing sewers and waterway drains are not long enough to allow for the natural purification processes described in Section 4 above, to function rapidly and adequately enough to keep pace with, and decompose the volumes and contaminant concentrations being introduced on a 24/7 flow through basis. It is evident that self- purification methods are not able to keep up and adequately deal with the problem. Discharge water from households and medium and small size manufacturing plants are the main source of contaminants. The problem is that providing for adequate point of source discharge water treatment, is financially and technically challenging. Installing and maintaining sewage treatment facilities are necessary for maintaining good river and lake water quality but the volumes of discharge water are huge and the ever growing number of manufacturing plants and residences has been exasperating the ever increasing contamination problem.

Adequate water treatment for rivers lakes and wetlands is exceptionally important especially given that water depletion is increasing on a global basis. The massive volumes of contaminated water being introduced into the environment continues to increase unabated and it is also painfully evident that modern water treatment technologies are costly and are not keeping up with the needs of the environment. EBD technology provides exceptional, continuous and sustainable water treatment as well as ecosystem remediation on small, intermediate as well as on massive scales, for considerably less cost and much less maintenance as compared to conventional remediation systems.



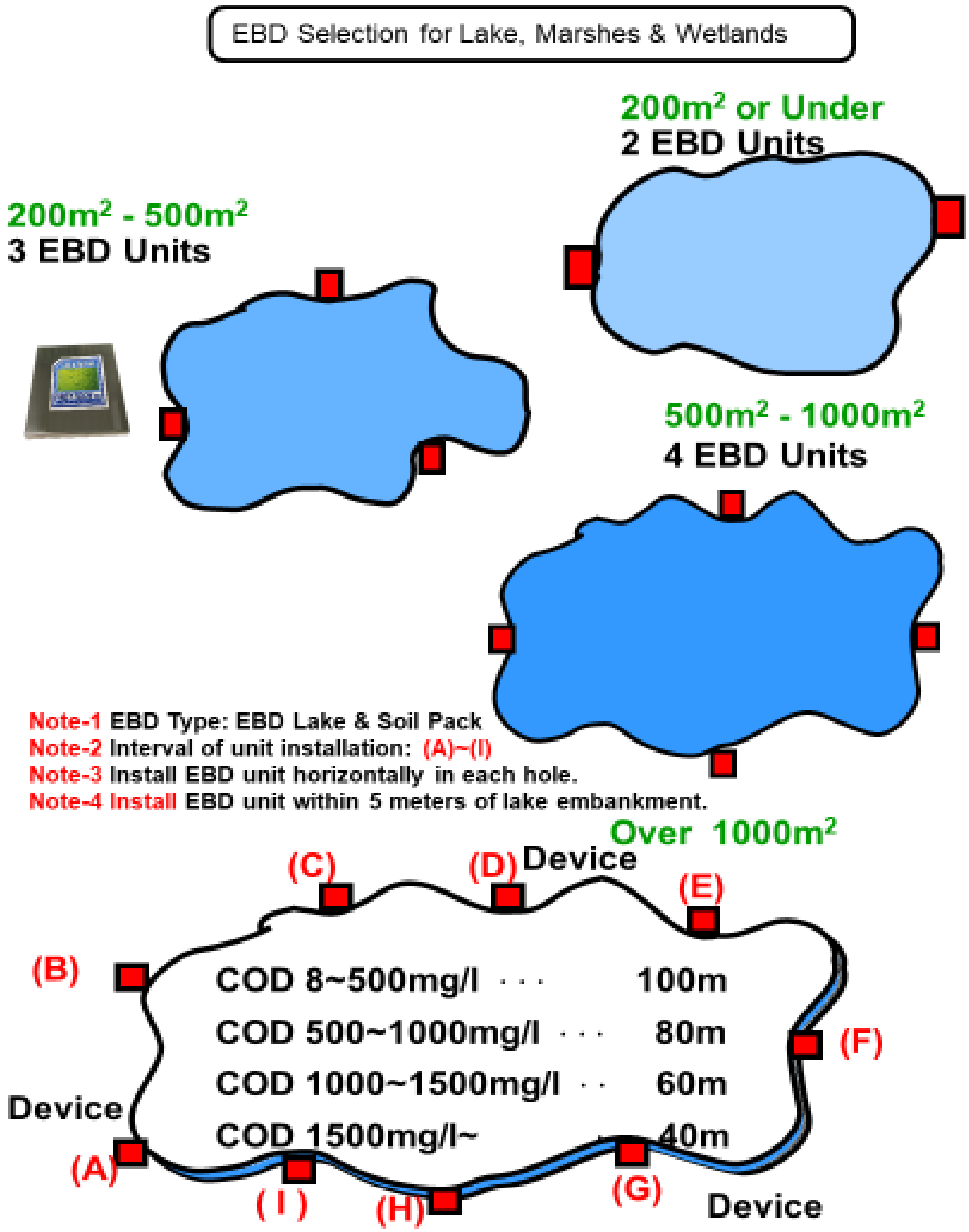
8. EBD RIVER PACK SYSTEM INSTALLATION - SUMMARIZED VERSION

EBD River Pack Unit
11 cm x 11 cm x 1 cm
No Power Requirements



Bury each EBD River Pack unit along both sides of the river banks at 20~30cm (8 to 12 inches) in depth below grade and place each unit horizontally at the bottom of each hole in the ground and refill hole with top soil. EBD River Pack installation intervals along both banks of the river will be spaced out, according to the width of the river and the BOD levels in the river water.

9. EBD LAKE & SOIL PACK SYSTEM INSTALLATION - SUMMARIZED VERSION

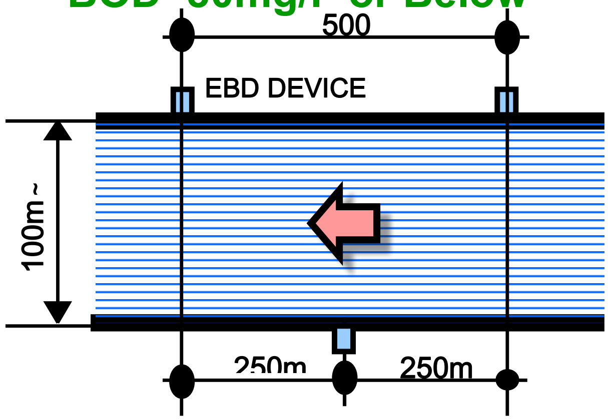


EBD Device Selection for Rivers

EBD River Pack

BOD=80mg/l- or Below

BOD=81mg/l- or Above

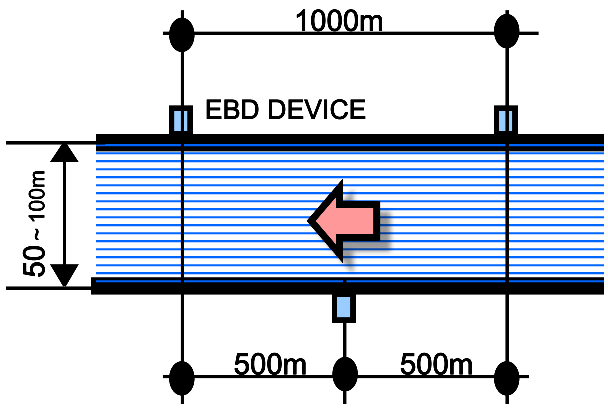


BOD 80~200mg/l · · · 60m

BOD 200~500mg/l · · · 30m

BOD 500~1000mg/l · · · 20m

Note-1 EBD Type: EBD River Pack

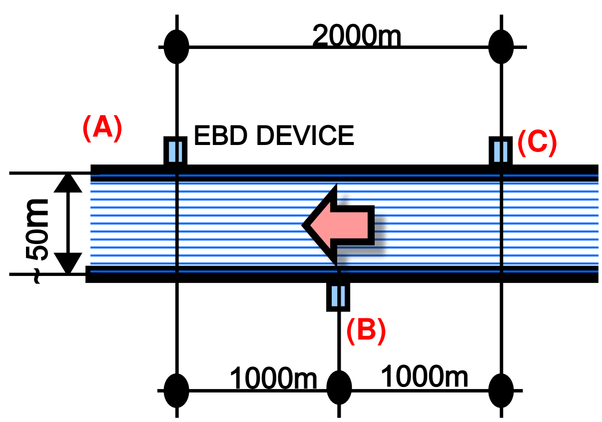


BOD 80~200mg/l · · · 125m

BOD 200~500mg/l · · · 60m

BOD 500~1000mg/l · · · 30m

Note-2 EBD River Pack installation Interval: (A)-(B)-(C)



BOD 80~200mg/l · · · 250m

BOD 200~500mg/l · · · 125m

BOD 500~1000mg/l · · · 60m

Note-3 EBD System should be installed

Bury each EBD Lake & Soil Pack unit, 20~30cm (8 to 12 inches) below grade along the entire perimeter of the lake shore and place each unit horizontally at the bottom of each hole in the ground then refill hole with topsoil. EBD Lake & Soil installation intervals will be spaced out according to the width of the lake as well as to COD levels in the lake water. If COD levels surpass 81 mg/l, more EBD Lake & Soil Pack units are required. An exact and detailed GPS recording should be recorded for each installation location.

10. EBD REMEDIATION EFFECTIVNESS EVEN WITH ONGOING POLLUTION

EBD River Pack and EBD Lake & Soil Pack units will continue to remediate and ensure vastly improved and consistent water quality on a daily, ongoing basis for over 15 years, even while the same volumes and concentrations of organic and inorganic pollutants continue to flow or be discharged into the EBD treated river and lake. In the event however, that pollutant flows and concentrations increase over time, eventually causing BOD levels to exceed 80 mg/l in the river and/or 80 mg/l COD levels in the lake, it will then be necessary to install additional EBD devices, in order to once again achieve and maintain the necessary NEP(-) and PEP (+) balance in the treated ecosystem and continue providing water quality which meets local environmental standards.

11. EBD ALGAE REMEDIATION AND CONTROL

EBD Lake & Soil Pack units are also very effective in eliminating algae in lakes, rivers and marine/coastal areas and once eliminated, preventing the algae from reoccurring. It is neither logical, financially viable nor sustainable to continue combating algae bloom using copper sulphate / chemicals which not only pollute but also dilute over time and become ineffective.

All materials contained in EBD units comply with OSHA 29 CFR XVII-1910.1200 Section (i). EBD systems do NOT contain hazardous components under current OSHA definitions, or EPA listing. The EBD materials do NOT contain any ingredients that are on the NPT list or registered with IARC for carcinogens and the material mixture tested as a whole has been found to be: • Nontoxic • Non-oxidizer • Not an irritant • Not a sensitizer in oral, dermal and ocular tests (see US Federal Hazardous Substance Act 16 CFR 1500) Section 3. Physical & Chemical Characteristics. EBD systems do not contain any flammable materials, are explosion proof and do not cause any electromagnetic interaction.