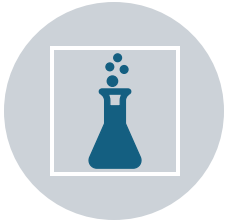
DIOTIN

CREATING A CLEANER TOMORROW TODAY

What is DIOTIN ?

DIOTIN is a breakthrough chemistry, the most powerful method for recycling, treating water and cleaning in place in the safest, most efficient and sustainable form.



DIOTIN is a unique chlorine dioxide solution which stays in the liquid phase even after dilution and can be applied in almost any commercial and industrial application where water is used.

Utilising pioneering biotechnology DIOTIN provides the most effective and comprehensive treatment for bacteria, biofilm, pathogens, fungi, and water borne viruses where consistent dependable results are critical, DIOTIN is safe and stable enabling transportation and use with a 24 month shelf life reduced chemical usage by up to 90% , greater water reuse, reduced cost and reduced energy usage are just some of the key benefits which contributes to profitable ESG.

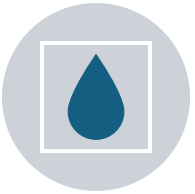
DIOTIN is environmentally friendly, DIOTIN is the only stable, long life, transportable Chlorine Dioxide concentrate technology available. DIOTIN is faster, more effective, safer and more environmentally friendly than existing water treatment.

The pioneering biotechnology that goes into DIOTIN delivers the most effective and comprehensive treatment for bacteria, biofilm, pathogens, fungi and water-borne viruses where a consistent, dependable result is critical.

Key Benefits Of DIOTIN

Water Recycling – DIOTIN enables businesses to safely reuse more water by improving the quality, reliability and efficiency of water recycling, thereby reducing the dependence on external water sources and safeguarding ongoing operations.

Reduced Chemical Use – DIOTIN is proven to be up to 90% more powerful than other water treatments such as Chlorine. This results in less chemical use, better results, and less pollution.



Reduced Pollution – DIOTIN is unique in delivering stable Chlorine Dioxide in a safe and stable liquid format; resulting in the highest levels of water quality, with minimal enviornmental impact.

Reduced system maintenance and downtime – DIOTIN is not corrosive and will deliver improved performance without the need for the costly ongoing repair and maintenance.

No chemical evaporation or loss of product in transport or storage, DIOTIN is a stable solution unlike many other water treatment products which a gas based.

Why Change To DIOTIN ?

- A single product, ready to use with no onsite generation required.
- A single product ready to use without the need for heavy machinery.
- Ground breaking chemical buffering results in a long shelf life with no product degradation even at elevated temperatures and outdoor storage.
- High product stability. Minimal vapour evolution during transport and storage under 55°C.
- No gassing from solution and minimises headspace and water line corrosion.
- The most effective oxidant in water treatment for the control of bacteria, biofilm, pathogens, fungi, and waterborne viruses.
- Extended biocide release activity delivers superior results at lower dosage levels.
- Chlorine Dioxide is produced in situ by dilution in the target water stream via a simple dosing pump or manual input
- High available biocide concentration for precision, lower chemical dosing requirement drives significant cost savings through:
- Reduced chemical expenditure, more efficient logistics and storage, Energy, water and maintenance efficiencies, Reduced system damage and corrosion, no needy for heavy plant and machinery sites.

Key ESG Benefits of Using DIOTIN

- Significant increases in the amount of water that can be reused and recycled safely in virtually all applications.
- Significant operational cost reductions are delivered through lower chemical dosing requirements.
- This regenerative chemistry sustains the formation of Chlorine Dioxide and reduces the chemical dosage requirement for more precise, safer treatment.
- Better system control at lower dosage results in reduced site visits for chemical deliveries.
- Significant reduction in gas emissions as a disinfectant by-product.
- Long shelf life allows for significant reduction in product testing and replacement reducing emissions from regular site visits.
- Reduction in chemical residuals in waste water reduces pollution levels in surrounding water table.
- DIOTIN can be applied safely into the target water stream and monitored remotely.

Ghana With / Out DIOTIN

Problems Facing Ghana

- Galamsey
- Waterborn Diseases; Cholera, E. coli Legionella
- Decline In Aquatic Life
- Contaminated Waters
- Negative Impact On Ghana Economy

Galamsey

- Galamsey, the illegal practice of small-scale gold mining, is harmful to the environment, causing deforestation, water pollution with toxic chemicals like mercury, and land degradation. People turn to galamsey for various reasons, including the high earnings potential it offers, especially when gold prices are favorable. Many small-scale miners lack the financial resources to start legal mining operations with proper licenses, equipment, and regulatory oversight. In some communities, galamsey has become normalized, with peer pressure and the allure of wealth from gold prompting more to join. Ghana's abundance of gold deposits, especially in regions like Ashanti and Western, further fuels its appeal. Weak enforcement of mining regulations, particularly in remote areas, allows illegal mining to thrive, while farmers facing crop failures due to climate change may turn to galamsey as an alternative income source. Additionally, the high costs and bureaucratic hurdles involved in obtaining legal mining licenses often push people toward illegal mining, which appears more accessible and immediate.

Waterborn Diseases

- Cholera, E. coli, Legionella, and other waterborne diseases in Ghana pose significant public health risks due to poor sanitation, unsafe water, and weak infrastructure. Many urban slums and rural communities lack proper sanitation facilities, leading to open defecation and contamination of drinking water sources. Limited access to clean water forces reliance on untreated sources like rivers and wells, increasing the spread of infections. Inadequate waste management worsens contamination, while poor hygiene and food handling further fuel outbreaks. Climate change and seasonal flooding exacerbate the problem by spreading bacteria and pollutants into water supplies. Additionally, weak regulation and maintenance of water systems create conditions for bacteria like Legionella to thrive. The lack of healthcare infrastructure delays treatment, leading to preventable deaths and long-term health effects, particularly among vulnerable populations. Addressing these challenges requires improved sanitation, better water management, stronger policies, and public health education.

Decline In Aquatic Life

- The decline in fish populations in Ghana's rivers is primarily due to water contamination from illegal mining, industrial waste, and poor sanitation. Rivers like the Pra, Offin, and Ankobra are polluted with harmful chemicals such as mercury and cyanide, destroying aquatic habitats and making fish unsafe for consumption. Overfishing and destructive practices worsen the situation, leaving many fishing communities facing economic hardship and food insecurity. Despite efforts to address pollution, weak enforcement continues to allow water bodies to deteriorate. Stronger policies and sustainable conservation are urgently needed to restore Ghana's rivers and protect fish populations.

Contaminated Waters

- Contaminated waters in Ghana's rivers, tainted by illegal mining, industrial waste, and poor sanitation, pose serious health risks. They breed waterborne diseases like cholera, typhoid, and dysentery, leading to diarrhea, dehydration, and death, especially among children. The presence of heavy metals like mercury and cyanide in the water causes long-term health issues, including kidney damage and cancer, while toxic substances in fish make them unsafe to eat. Poor water quality and sanitation create a cycle of health problems and economic hardship for local communities.

Negative Impacts On Ghana Economy

- The contamination of Ghana’s rivers negatively impacts key sectors like agriculture, fishing, and tourism. Polluted waters reduce fish populations, harming fishermen's livelihoods, and damage crops and livestock, leading to economic losses. The tourism industry also suffers due to the degradation of aquatic ecosystems. Additionally, the costs of water treatment and healthcare for waterborne diseases further strain public resources. As these sectors are undermined, the overall economic development of affected regions is hindered, perpetuating poverty and hardship for local communities.

DIOTIN Specimen Testing

Methodology

- Water samples were collected from various locations, including rivers, lagoons, and municipal mines, for analysis of key physical and chemical parameters. The study examined turbidity, color, odor, pH, Total Suspended Solids (TSS), and Total Dissolved Solids (TDS). The results were then evaluated against WHO guidelines and local GS 175-1 standardsto assess compliance and identify potential areas of concern.

Test Results & Reports

- This report presents the findings of an assessment of various rivers and water bodies in Ghana, focusing on the impact of illegal mining (galamsey) activities and indiscriminate municipal waste and sewage disposal. The study was carried out by DIOTIN in the Western Region and in Accra, the sample specimens were analyzed by the Water Research Institute, Environmental Chemistry and Sanitation Engineering Division on behalf of Diotin. The results indicate high pollution levels in several water bodies, with key parameters such as high color and turbidity, turbidity and pH exceeding World Health Organization (WHO) standards and local GS 175-1 guidelines.

River Ankobra

The Ankobra River in Ghana has an average annual discharge of 439.13 m^3/s, with seasonal variations increasing during the rainy season. Its baseflow is measured at 13.75 m^3/s, influenced by precipitation patterns and upstream water usage.

RIVER ANKOBRA BOTTOM (SANWOMA)

- Location: Estuary where the Ankobra River meets the sea at Sanwoma, along the Takoradi-Elubo Road
  Date of Sample Collection: Wednesday, January 29, 2025

- The team conducted an assessment at the Ankobra estuary in Sanwoma, where the river water appeared unexpectedly clear. Water samples were collected from both sides of the Ankobra bridge for laboratory testing. Analysis was performed on the samples before and after treatment with DIOTIN.

RIVER ANKOBRA UP (DOMINASE)

- Location: Dominase, Western Region (a major galamsey hub)
  Date of Sample Collection: Wednesday, January 29, 2025

- During the visit to Dominase, the team observed ongoing illegal mining (galamsey) operations, where alluvial gold is extracted along the Ankobra River. A Chinese national was seen offloading gallons of diesel into a boat on the river, reportedly for use at a galamsey site, posing a significant risk of fuel spillage. Additionally, children were spotted swimming and diving in the heavily polluted river, which serves as a vital source of drinking water and fishing for the local community. Water samples were collected for laboratory analysis before and after treatment with DIOTIN.

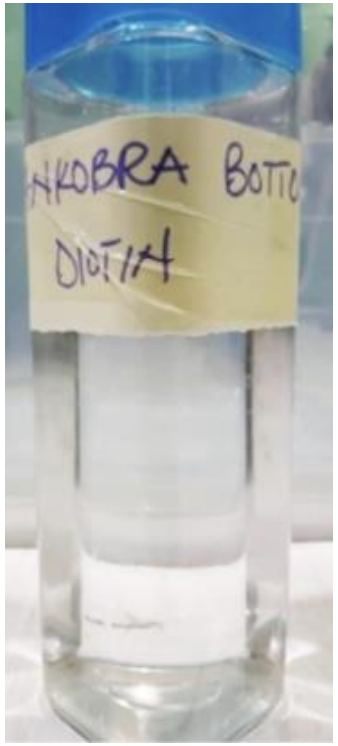
River Ankobra

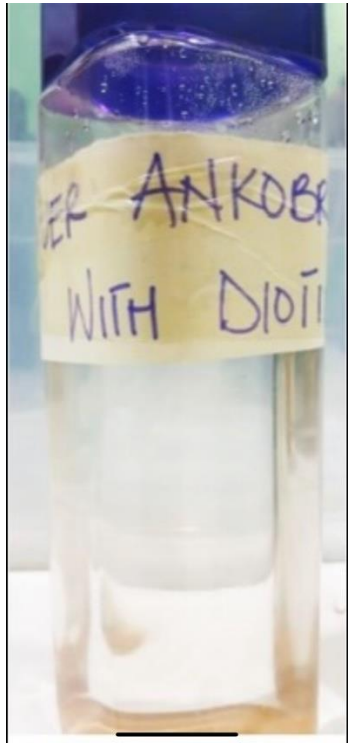
Ankobra River With / Out DIOTIN

Test Specimen River Ankobra

Test Specimen River Ankobra

Test Specimen River Ankobra

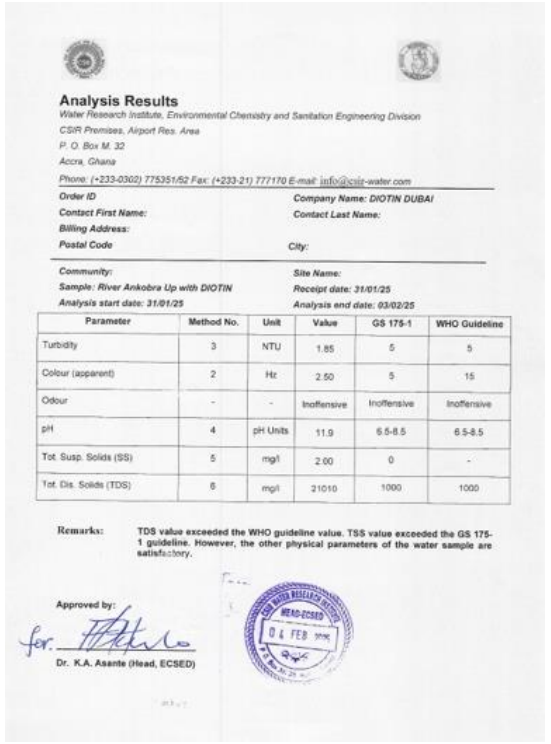




Analysis

- This image shows the test results and proof of concept for Ankobra River, the bottle to the left was a sample taken on Wednesday 29th January 2025, in the region of the illegal mining sites in Ankobra River, the bottle to the right was the same colour and from the exact same test area as the bottle to the left, however the bottle to the right was treated with DIOTIN. The image evaluates the difference only 12 hours took for DIOTIN to revert the contaminated water back to its original fresh state. After the specimens were dosed they were handed over to trusted members of the governments team and were only brought back after 12 hours, this specimen was only dosed once, some sediment is left from the first dose but it shows DIOTIN can help Ghana clean their waters and then make them sustainable in the future.The second image shows the results after 20 hours.
- DIOTIN achieved incredible results as can be seen in the laboratory results, lowering the turbidity from 353 to 1.85 WHO guidelines is 5 and changing the color from 300 to 2.5 WHO guidelines is 15.

Laboratory Results



Analysis Results

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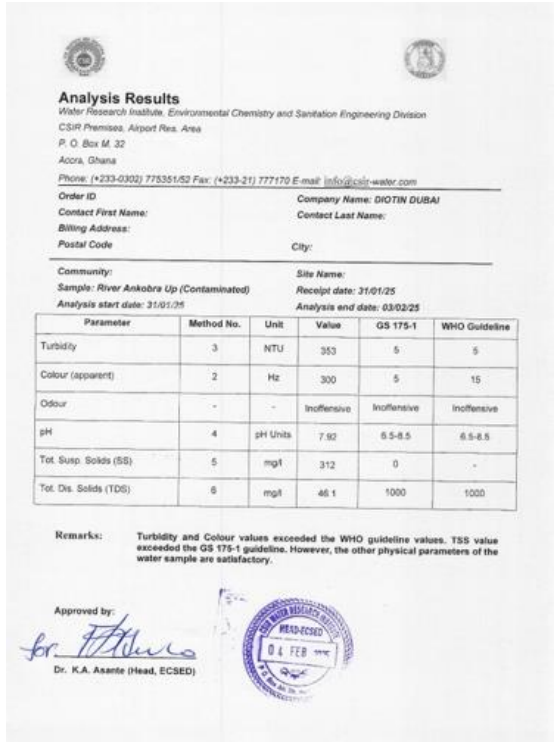
Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

Community: ***Site Name:***
Sample: River Ankobra Up with DIOTIN ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	1.85	5	5
Colour (apparent)	2	Hz	2.50	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	11.9	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	2.00	0	-
Tot. Dis. Solids (TDS)	6	mg/l	21010	1000	1000

Remarks: TDS value exceeded the WHO guideline value. TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.

Approved by:
for.
Dr. K.A. Asante (Head, ECSED)



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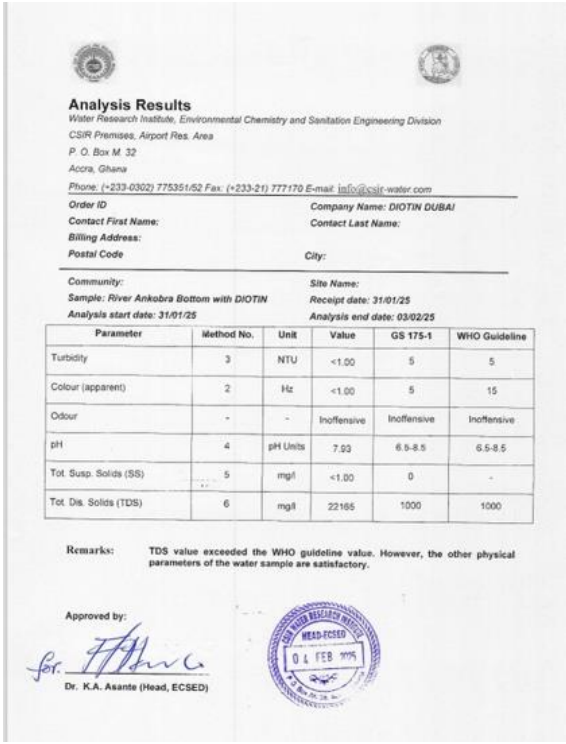
Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

Community: ***Site Name:***
Sample: River Ankobra Up (Contaminated) ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	353	5	5
Colour (apparent)	2	Hz	300	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	7.92	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	312	0	-
Tot. Dis. Solids (TDS)	6	mg/l	46.1	1000	1000

Remarks: Turbidity and Colour values exceeded the WHO guideline values. TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.

Approved by:
for.
Dr. K.A. Asante (Head, ECSED)



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Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

Community: ***Site Name:***
Sample: River Ankobra Bottom with DIOTIN ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	<1.00	5	5
Colour (apparent)	2	Hz	<1.00	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	7.93	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	<1.00	0	-
Tot. Dis. Solids (TDS)	6	mg/l	22165	1000	1000

Remarks: TDS value exceeded the WHO guideline value. However, the other physical parameters of the water sample are satisfactory.

Approved by:
for.
Dr. K.A. Asante (Head, ECSED)

What Did DIOTIN Achieve

- DIOTIN removed Lead from the water
- DIOTIN removed Mercury from the water
- DIOTIN remived E.coli from the water
- DIOTIN removed Legionella from the water
- DIOTIN removed all water born viruses from the water
- DIOTIN caused decolourisation, transforming the waters visual appearance from a darkened brown to a natural, clear transparent and fresh state.

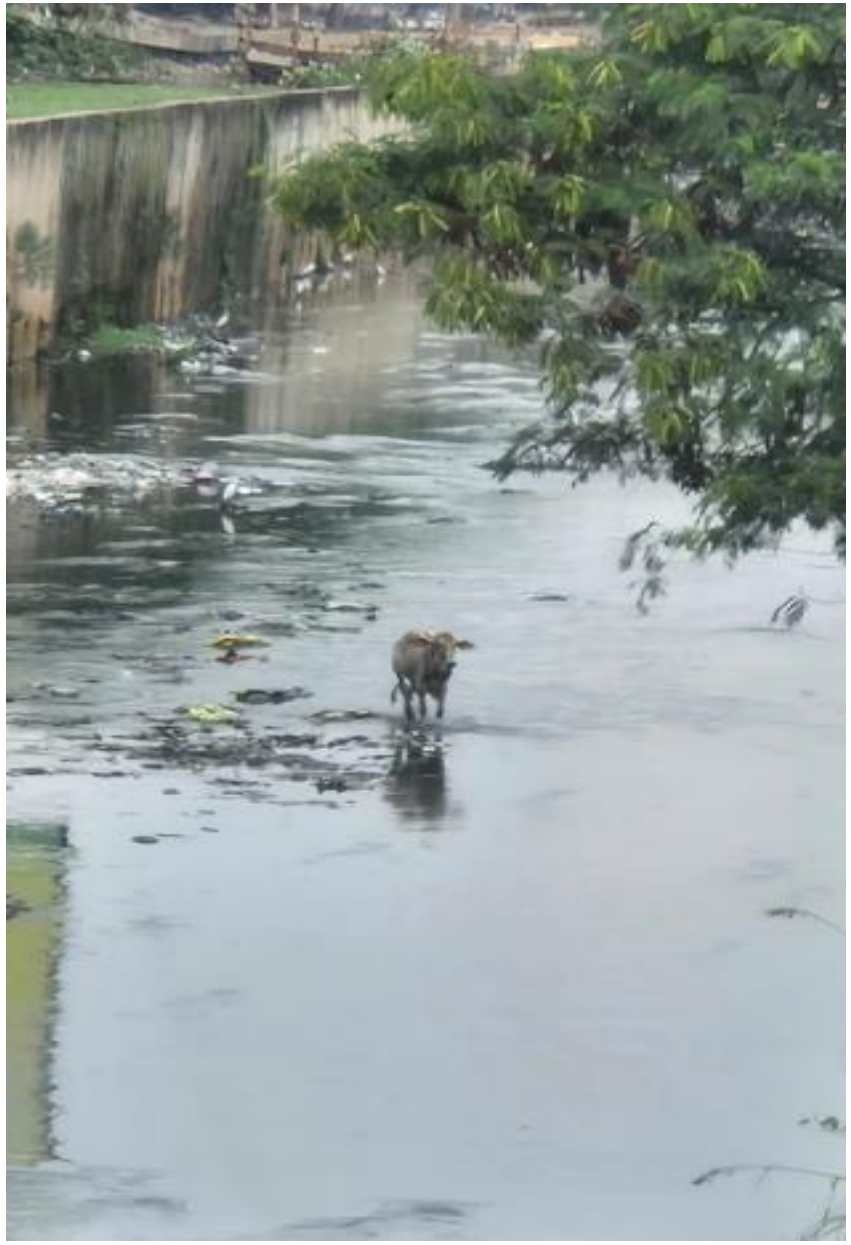
Odaw River & Korle Lagoon

KORLE LAGOON

- Location: Alajo, Accra, Greater Accra Region
  Date and Time of Sample Collection: Sunday, January 26, 2025, 2:27 PM
- Water samples were collected from a heavily polluted gutter in Alajo for quality analysis. The study aimed to evaluate contaminant levels and sediment accumulation in the water. Diotin was introduced to some samples, resulting in rapid purification.

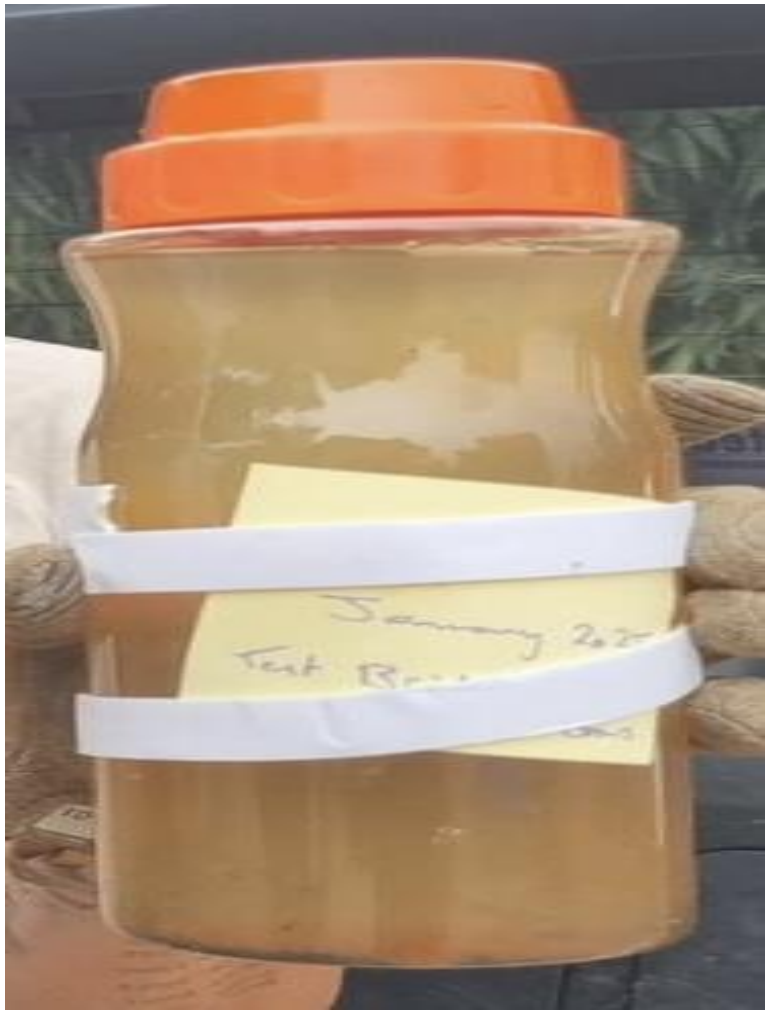
Korle Lagoon

River Odaw

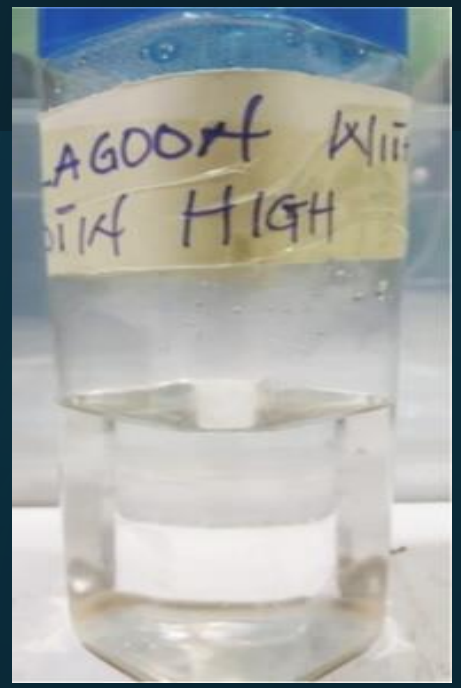


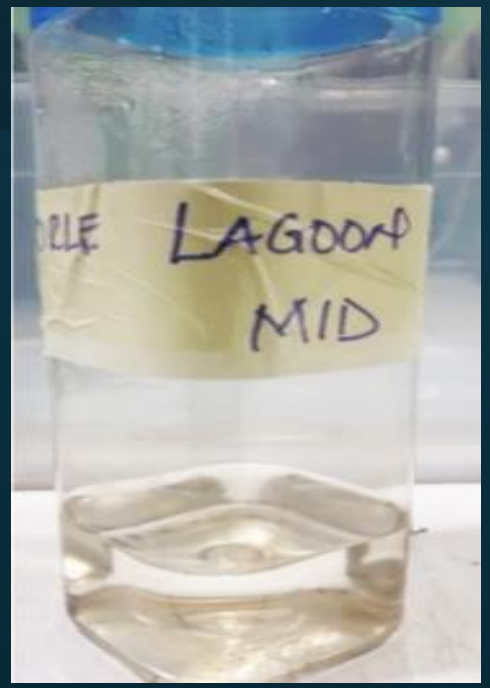
River Odaw

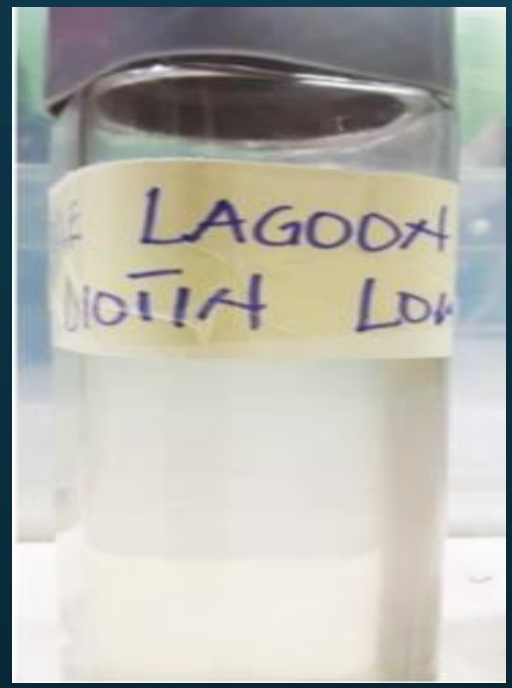
Test Specimen River Odaw



Test Specimen Korle Lagoon / River Odaw



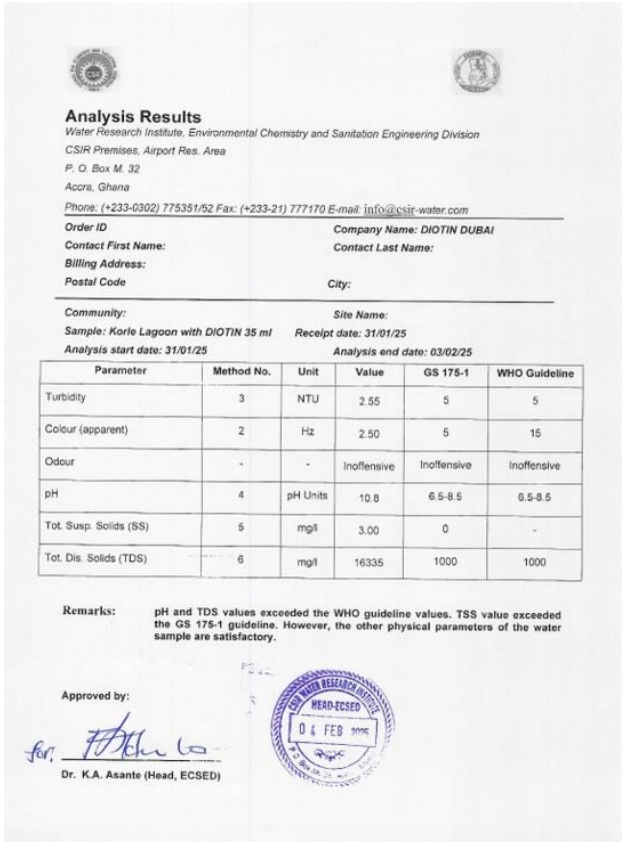




Analysis

- The Odaw River runs in to Korle Lagoon in Accra and suffers from severe pollution, especially downstream, due to human activities. Studies have detected high levels of antibiotic-resistant E. coli, far exceeding WHO safety guidelines, posing serious health risks. Research also highlights fecal contamination in communities relying on the river for drinking water. An ecological assessment shows worsening pollution downstream, with a decline in sensitive aquatic species. These findings underscore the urgent need for improved waste management and pollution control to restore the river's water quality.
- DIOTIN achieved great results reducing turbidity from 52.6 to 3.43 the WHO guidelines state 5 and changing the color by breaking down solids in the specimen from 60 to 5, as the laboratory results show we also showed for the highlight of DIOTIN through heavy dosage by in the same time frame lowering turbidity from 52.6 to 2.55 and the color from 60 to 2.5.

Laboratory Results



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Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

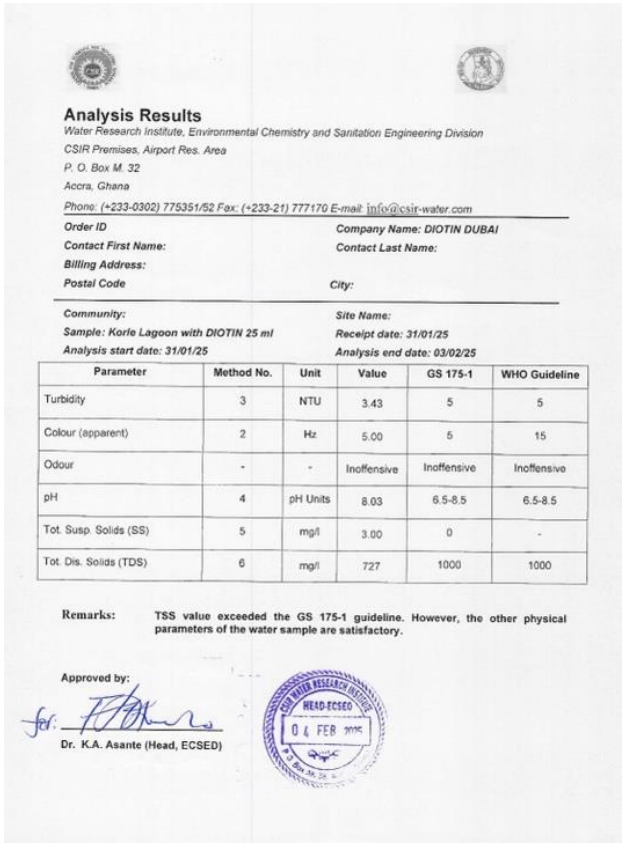
Community: ***Site Name:***
Sample: Korle Lagoon with DIOTIN 35 ml ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	2.55	5	5
Colour (apparent)	2	Hz	2.50	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	10.8	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	3.00	0	-
Tot. Dis. Solids (TDS)	6	mg/l	16335	1000	1000

Remarks: pH and TDS values exceeded the WHO guideline values. TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.

Approved by:
for:
Dr. K.A. Asante (Head, ECSED)

CSIR WATER RESEARCH INSTITUTE HEAD-ECSED 04 FEB 2025



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Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

Community: ***Site Name:***
Sample: Korle Lagoon with DIOTIN 25 ml ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	3.43	5	5
Colour (apparent)	2	Hz	5.00	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	8.03	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	3.00	0	-
Tot. Dis. Solids (TDS)	6	mg/l	727	1000	1000

Remarks: TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.

Approved by:
for:
Dr. K.A. Asante (Head, ECSED)

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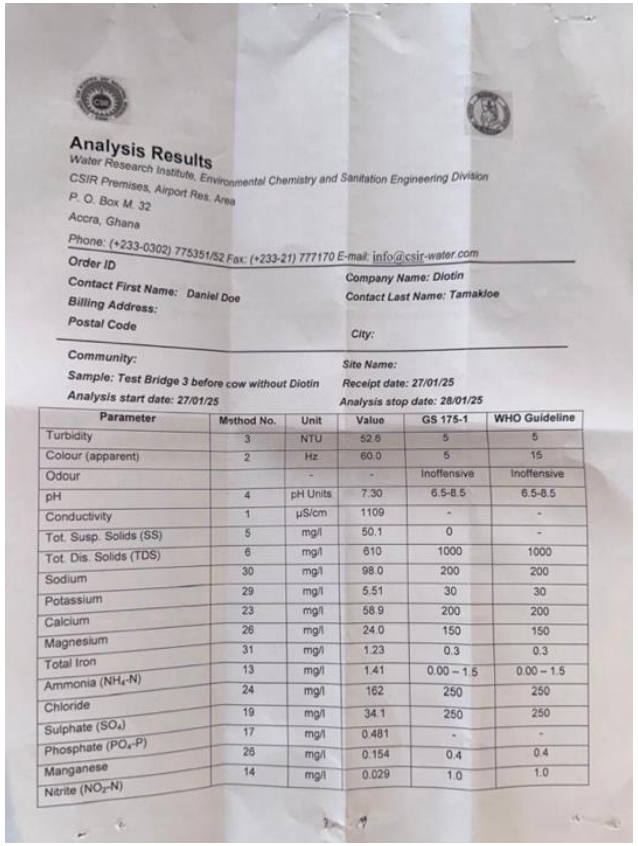
Laboratory Results



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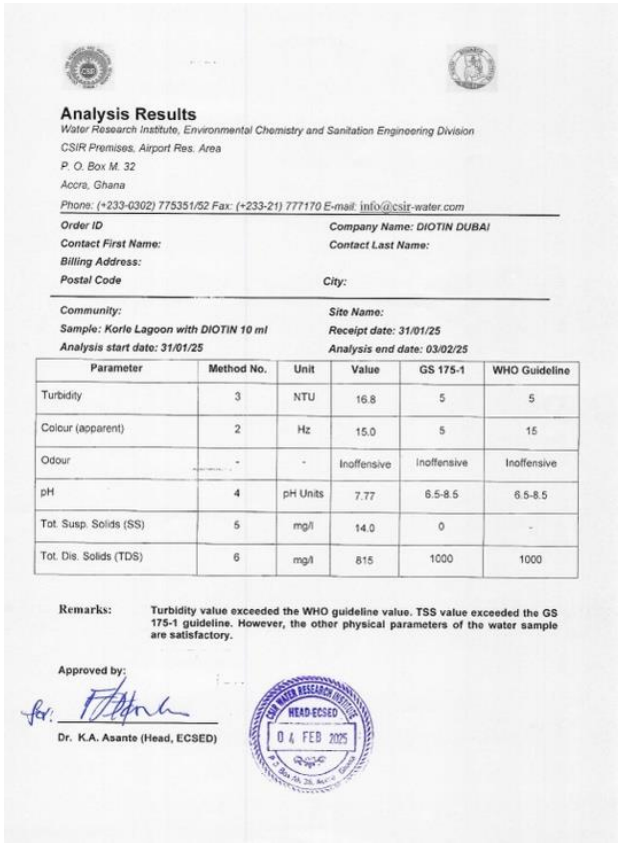
Phone: (+233-0302) 775351/52 Fax: (+233-21) 777170 E-mail: info@csir-water.com

Order ID
Contact First Name: Daniel Doe
Billing Address:
Postal Code
Company Name: Diotin
Contact Last Name: Tamakloe
City:

Community:
Sample: Test Bridge 3 before cow without Diotin
Analysis start date: 27/01/25
Site Name:
Receipt date: 27/01/25
Analysis stop date: 28/01/25

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	52.6	5	5
Colour (apparent)	2	Hz	60.0	5	15
Odour		-	-	Inoffensive	Inoffensive
pH	4	pH Units	7.30	6.5-8.5	6.5-8.5
Conductivity	1	µS/cm	1109	-	-
Tot. Susp. Solids (SS)	5	mg/l	50.1	0	-
Tot. Dis. Solids (TDS)	6	mg/l	610	1000	1000
Sodium	30	mg/l	98.0	200	200
Potassium	29	mg/l	5.51	30	30
Calcium	23	mg/l	58.9	200	200
Magnesium	26	mg/l	24.0	150	150
Total Iron	31	mg/l	1.23	0.3	0.3
Ammonia (NH_4-N)	13	mg/l	1.41	0.00 – 1.5	0.00 – 1.5
Chloride	24	mg/l	162	250	250
Sulphate (SO_4)	19	mg/l	34.1	250	250
Phosphate (PO_4-P)	17	mg/l	0.481	-	-
Manganese	26	mg/l	0.154	0.4	0.4
Nitrite (NO_2-N)	14	mg/l	0.029	1.0	1.0



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Order ID
Contact First Name:
Billing Address:
Postal Code
Company Name: DIOTIN DUBAI
Contact Last Name:
City:

Community:
Sample: Korle Lagoon with DIOTIN 10 ml
Analysis start date: 31/01/25
Site Name:
Receipt date: 31/01/25
Analysis end date: 03/02/25

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	16.8	5	5
Colour (apparent)	2	Hz	15.0	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	7.77	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	14.0	0	-
Tot. Dis. Solids (TDS)	6	mg/l	815	1000	1000

Remarks: Turbidity value exceeded the WHO guideline value. TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.

Approved by:

for:

Dr. K.A. Asante (Head, ECSED)

CSIR WATER RESEARCH INSTITUTE HEAD-ECSED 04 FEB 2025

What Did DIOTIN Achieve

- DIOTIN removed All Solids from the Water
- DIOTIN remived E.coli from the water
- DIOTIN removed Legionella from the water
- DIOTIN removed all water born viruses from the water
- DIOTIN caused decolourisation, transforming the waters visual appearance from a darkened brown to a natural, clear transparent and fresh state.

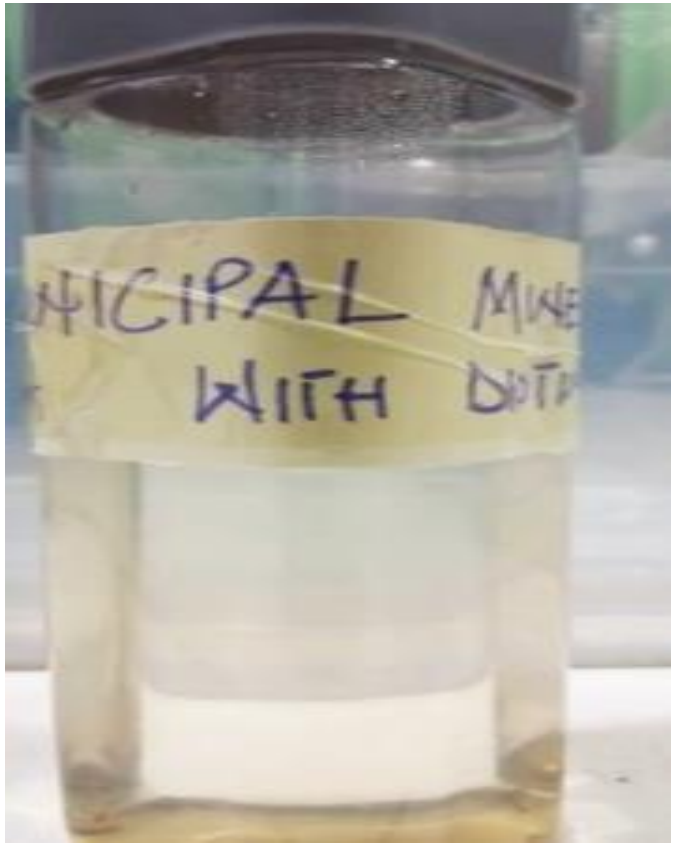
Abandoned Municipal Mine

MUNICIPAL MINE (CONTAMINATED) A AND B

- Location: Abandoned alluvial small-scale mining sites near Dominase
  Date of Sample Collection: Wednesday, January 29, 2025
- While returning from Dominase, the team came across an abandoned alluvial mining site that had been taken over by illegal galamsey operators. Water samples were collected from multiple points within the site to assess pollution levels. The samples were analyzed in the laboratory both before and after treatment with Diotin.

Abandoned Municipal Mine

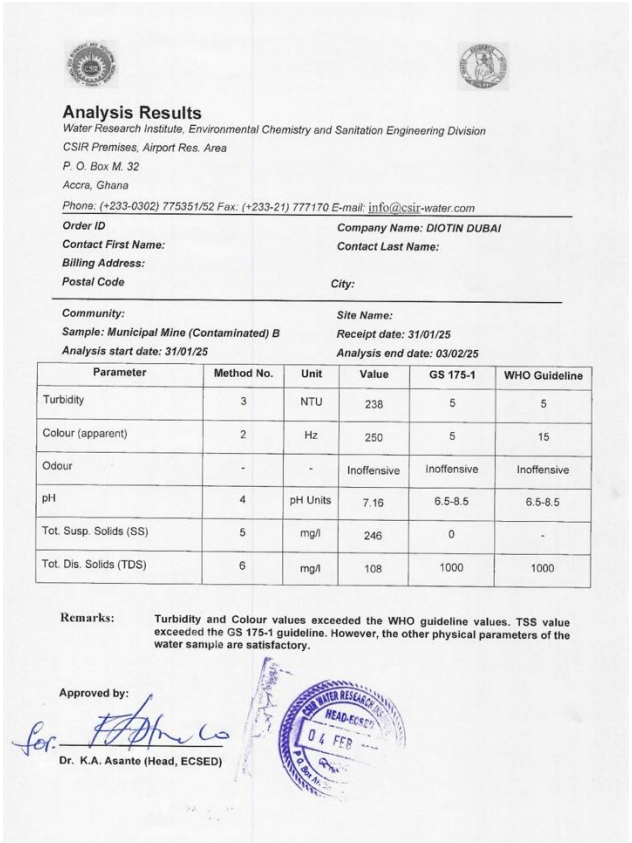
Test Specimen Abondened Municipal Mine



Analysis

- Abandoned mines have caused significant environmental challenges, including deforestation, soil erosion, and water pollution. Without proper closure and reclamation plans, these sites remain vulnerable to illegal mining activities, exacerbating environmental degradation. Many abandoned mining areas have also contributed to the pollution of nearby water bodies, such as the Ankobra River, which has been severely affected by runoff, harming aquatic ecosystems and posing serious health risks to communities that rely on these waters for drinking and fishing. Residents near these sites face exposure to hazardous chemicals like mercury and cyanide, commonly used in gold extraction. These toxic substances can leach into the soil and water, leading to long-term environmental and health risks. A key solution to these issues is reclamation, which involves restoring abandoned mines for agricultural use or natural habitats, helping to rehabilitate the land and mitigate further environmental damage. The findings highlight the need for tougher oversight on the mining industry and the introduction of education in sustainability and water recycling treatment.
- The laboratory results show from this abandoned municipal mine turbidity was 238 with DIOTIN lowering this to 28.9, this is still higher than the WHO guidelines of 5 showing this water would need to be treated for a second time due to such high build up of foreign contamination in the water and the same example can be taken for the colour of the water from 250 to 30. With a further dose of DIOTIN this water would be within the WHO and GS175-1 guidelines.

Laboratory Results



Analysis Results

Water Research Institute, Environmental Chemistry and Sanitation Engineering Division
CSIR Premises, Airport Res. Area
P. O. Box M. 32
Accra, Ghana
Phone: (+233-0302) 775351/52 Fax: (+233-21) 777170 E-mail: info@csir-water.com

Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

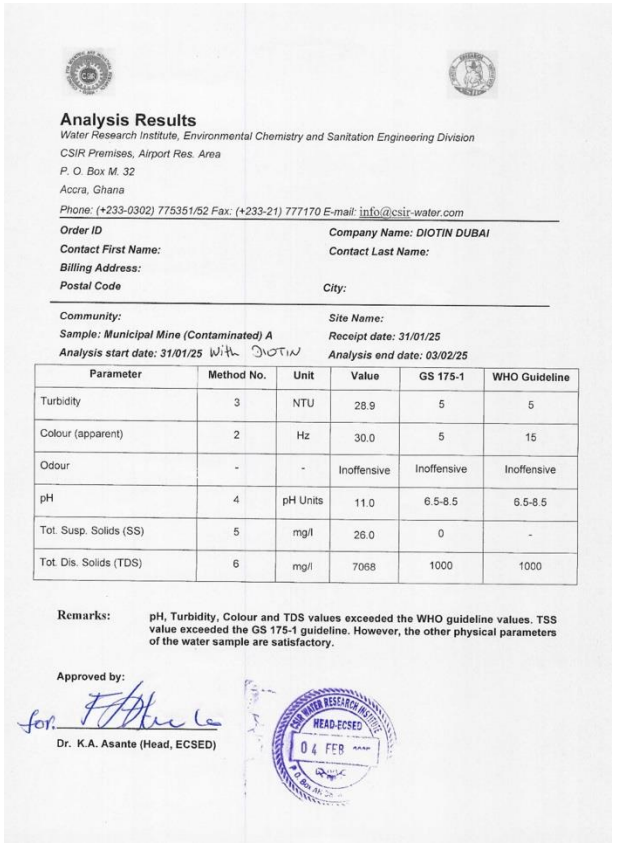
Community: ***Site Name:***
Sample: Municipal Mine (Contaminated) B ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	238	5	5
Colour (apparent)	2	Hz	250	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	7.16	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	246	0	-
Tot. Dis. Solids (TDS)	6	mg/l	108	1000	1000

Remarks: **Turbidity and Colour values exceeded the WHO guideline values. TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.**

Approved by:
for.
Dr. K.A. Asante (Head, ECSED)

CSIR WATER RESEARCH INSTITUTE HEAD-ECSED 04 FEB P. O. Box M. 32



Analysis Results

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CSIR Premises, Airport Res. Area
P. O. Box M. 32
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Phone: (+233-0302) 775351/52 Fax: (+233-21) 777170 E-mail: info@csir-water.com

Order ID ***Company Name: DIOTIN DUBAI***
Contact First Name: ***Contact Last Name:***
Billing Address:
Postal Code ***City:***

Community: ***Site Name:***
Sample: Municipal Mine (Contaminated) A ***Receipt date: 31/01/25***
Analysis start date: 31/01/25 With DIOTIN ***Analysis end date: 03/02/25***

Parameter	Method No.	Unit	Value	GS 175-1	WHO Guideline
Turbidity	3	NTU	28.9	5	5
Colour (apparent)	2	Hz	30.0	5	15
Odour	-	-	Inoffensive	Inoffensive	Inoffensive
pH	4	pH Units	11.0	6.5-8.5	6.5-8.5
Tot. Susp. Solids (SS)	5	mg/l	26.0	0	-
Tot. Dis. Solids (TDS)	6	mg/l	7068	1000	1000

Remarks: **pH, Turbidity, Colour and TDS values exceeded the WHO guideline values. TSS value exceeded the GS 175-1 guideline. However, the other physical parameters of the water sample are satisfactory.**

Approved by:
for.
Dr. K.A. Asante (Head, ECSED)

CSIR WATER RESEARCH INSTITUTE HEAD-ECSED 04 FEB P. O. Box M. 32

What Did DIOTIN Achieve

- DIOTIN removed Lead from the water
- DIOTIN removed Mercury from the water
- DIOTIN remived E.coli from the water
- DIOTIN removed Legionella from the water
- DIOTIN removed all water born viruses from the water
- DIOTIN caused decolourisation, transforming the waters visual appearance from a darkened brown to a natural, clear transparent and fresh state.

DIOTIN Proposal For Ghana

- DIOTIN can be used across Ghana in all industries, there is no contaminant our product cannot be used to fight, the dosage level is based on 10ml per ton of water, we advise to our customers and clients that the dosage can be increased with no harm to the aquatic life or human beings if being used against a higher contaminant.
- To begin to make a critical change in Ghana's water ways, our advice to Ghana will be to start with the The Western Region with Ankobra River and in the capital Accra with River Odaw and Korle Lagoon.
- For the difference to be seen and to make a difference we advise to clean these entire water ways.

Application Of Diotin In Ghana

- Ankobra River
- Petro Tankers
- Delivers up to 28.000 liters of DIOTIN in 35 minutes, without risk to riverbanks, due to the difficult terrain this type of vehicle is imperative for the delivery to each dosage station. These tankers will be procured / leased in country using a Ghanaian company
- Odaw River & Korle Lagoon
- Petro Tankers, Water Tankers, IBC's
- Delivers up to 28.000 liters of DIOTIN in 35 minutes, without risk to riverbanks, due to the smaller spaces and access to these waters we see this as the best solution for dosage. The tankers will be procured / leased in country, the IBC will come from ready made from our manufactory and will be recycled in country.

Ankobra River Proposal Contaminated To Fresh

- The Ankobra River in Ghana has an average annual discharge of 439.13 m^3/s, with seasonal variations increasing during the rainy season. Its baseflow is measured at 13.75 m^3/s, influenced by precipitation patterns and upstream water usage.
- The mean value being 226.44 m^3/s, calculated as speed per second x 60 x 60 x 24 x 365
- The Ankobra River has a mean average of 7,141,011,840 m^3/a
- This calculation means River Ankobra needs 360 containers / 7,128,000 kg of DIOTIN
- Total Gross Cost $131,511,600 (including import taxes / vat)
- Total Net Cost $106,920,000 (excluding import taxes / vat)
- Time Frame 55 days for shipping + 10 days for export and import
- Time Frame For Application 90 days
- Total Time Needed From Start To Job End
- Price Includes: Logistic, Delivery, Tank Lease, Staff, All In Country Costings, Applicable Import Duties.

Korle Lagoon / River Odaw Proposal Contaminated To Fresh

- The Korle Lagoon & River Odaw in Ghana have an average annual discharge of 60 m^3/s, with seasonal variations increasing during the rainy season.
- The value being 60 m^3/s, calculated as speed per second x 60 x 60 x 24 x 365
- The Korle Lagoon have a average of 1,892,160,000 m^3/a
- This calculation means Korle Lagoon & River Odaw need 144 containers / 2,851,200 kg of DIOTIN
- Total Gross Cost $52,604,640 (including import taxes / vat)
- Total Net Cost $42,768,000 (excluding import taxes / vat)
- Time Frame 55 days for shipping + 10 days for export and import
- Time Frame For Application 90 days
- Total Time Needed From Start To Job End
- Price Includes: Logistic, Delivery, Tank Lease, Staff, All In Country Costings, Applicable Import Duties, sludge clean up where necesary.

DIOTIN Cost For Ghana Clean Project

Water	Volume of DIOTIN Required (kg)	Cost USD $
Korle Lagoon & Odaw River	2,851,200	$42,768,000
Ankobra River	7,128,000	$106,920,000
Total	9,979,200	$149,688,000

Water Treated Cost Ratio Analysis

Volume of Product Used	Volume of Water Treated	Cost $
10ML	1 Ton	$0.15
1LTR	100 Ton	$15
1 IBC (1000 LTR)	100,000 Ton	$15,000
1 Container (19,800LTR)	1,980,000 Ton	$297,000
10 Container	19,800,000 Ton	$2,970,000
100 Container	198,000,000 Ton	$29,700,000
504 Container	997,920,000 Ton	$149,688,000

PROJECT	Delivery	Application &Treatment	Total
ANKOBRA RIVER	55 DAYS	90 DAYS	145 DAYS
KOERLE LAGOON	55 DAYS	90 DAYS	145 DAYS

- Delivery will come from our manufacturing plant in Hanover, Germany, the 504 containers will be produced over 8 days, we have built in a margin of delay in shipping and logistics to the 90 days treatment, this treatment timetable allows for moving DIOTIN product into the correct position for dosing, we have also factored in the treatment timetable for adverse weather conditions, with the correct planning and weather at the time of dosing we have designated 3-10 days for full treatment application to take place.

IMPLEMENTATION OF DIOTIN

Advice For Ghana

- Legislation on all mining companies using DIOTIN
- Legislation on all sewage works using DIOTIN
- Legislation on all heavy industry using DIOTIN
- Mining licences for going through an education course for sustainability and water treatment / recycling using DIOTIN
- Export licences for companies following sustainability
- Tax credit for companies using DIOTIN
- Government entity is the private distributor for DIOTIN in Ghana
- Director and shareholder penalties for all involved in contamination not following legislation and guidelines.
- Import duty relief for this project, it reduces the cost to the government by 23%, this would include relief on import for DIOTIN product and all needed goods for our team to do the job correctly and properly.

What Will Diotin Do As A Company For Ghana ?

- DIOTIN will treat the contaminated water of Korle Lagoon, Odaw River and Ankobra River
- DIOTIN will create free educational workshops for public and private sectors
- DIOTIN will create free educational courses and visits for, and to, the illegal mines to educate the minors on becoming sustainable through correct and safe product use but more importantly on how to recycle the water
- DIOTIN will in partnership with the government create a surveilance of the Ghanaian waters to control future contaimantion and pinpoint the cause to assist in a clean up but also for finding at fault parties and giving free training. This surveilance also allows the government to fine the parties or withdraw export permits
- DIOTIN proposes the government make it possible through a compulsory mining course run for free by DIOTIN that miners are given a licence and export permit licence on completion of the full course where they must prove to have knowledge and understanding in sustainable mining
- DIOTIN will offer an emergency system should a contamination happen in country so that fast assitance is available in a shortened period of time
- DIOTIN will create jobs in Ghana
- DIOTIN will work with Ghana’s government to offer assitance through all industries to become more efficient in process but also in financial costings.
- DIOTIN will assist the Ghanaian government in implementing sustainability in Ghana.

Job Creation

- DIOTIN expects to employ up to 400 Ghanaians for this project through logistics and implementation
- Ghana’s mining industry currently has circa five million people within the population connected to mining of different sorts, by implementing DIOTIN’s proposals this will safe guard jobs and livelihood but also create more jobs in the process.
- Through this clean project with DIOTIN, Ghana’s fishing industry will once again thrive, giving Ghana’s youth the opportunity of income through working in the waters fishing once more
- Through this clean project with DIOTIN, Ghana’s tourism industry will thrive, with the water ways no longer being hidden but an attraction for the world to travel to enjoy
- Through this clean project with DIOTIN, Ghana’s economy will increase with the ability to draw in foreign investment for hotels, property development, commercial real estate and manufacturing with the opportunity of clean water to enable this growth.

Sustainability Post Treatment / Clean Up

- Dosage machines set at pre planned points subject to initial clean
- Cost efficient dosage levels subject to initial clean
- Membrane microscopic pores (filtration to remove sediment 0.0001 microns)

Opportunities For Ghana Economy With DIOTIN

- Tolling of DIOTIN in country, super concentrate shipped in to Ghana where 1 container can make 10, 20 or more depending on product strength
- For the Clean Project in Ghana, we will be able to establish either one central, or multiple manufacturing points in country, to be directed in terms of location, to support the project within around 6 months
- This means that for this current project we would look to send the first 6 months stock direct from Germany and / or Saudi Arabia but by month 7 we would aim to be operational with manufacture in country at the latest, this means for Ankobra River project and Korle Lagoon / River Odaw will be product being delivered in, however for keeping Ghana sustainable and moving on to other projects with the government we would be more efficient in country for delivering the needed volume in much shorter time frames.

Options For Ghana For Financing The Project

- IMF Grant funding and loan offset
- UNICEF Grants
- United Nations Grants
- Bill & Malinda Gates Foundation Grants
- Anfrican World Bank Group Grants
- Creating water credits with ever litre of water treated and trading abroad
- Increase in tarrifs on gold mining
- Increase in taxes on gold export
- Ghanain Government mandates DIOTIN as the only water biocide product to be used in country
- Ghanain government becomes the only in country supplier and seller of DIOTIN in Ghana
- Ghanaian government creates a new source of govermental income
- Carbon Credits / Water Credits

Summary

- DIOTIN is confident that our results speak for themselves, we took the Turbidity in the Ankobra River from 353 to 1.85, we took the colour in the same sample from 300 to 2.5. Our objective is to be a partner not just a supplier with an invoice for the Ghanaian government but also for the Ghanian people
- DIOTIN is confident that it has a solution for the Ghanaian government and people that does not end at only removing the contaminents from the waters of Ankobra River, Odaw River and Korle Lagoon but that our product will give Ghana the solution to its sewage systems, municipal water and hospitals whilst being a partner with the government across all private industries to secure Ghana's future sustainably
- DIOTIN is the factually correct decision and only product solution for Ghana.

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DIOTIN

CREATING A CLEANER TOMORROW TODAY