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disconnection on: : 15-09-2017 : 21:11:53

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+0100#(D201710)) (RPM D201710)

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Records: 105.386.616

Terms: 1.469.330.339

Occurrences: 20.744.507.200

Last Update: 20170918

[EPODOC: SS 1] method and treatment and wastewater

Results in EPODOC 20.585

[SS 2] 1 and electrochemical

Results in EPODOC 350

[SS 3] 2 and helical

Results in EPODOC 0

[SS 4] 2 and oxidation

Results in EPODOC 122

[SS 5] 4 and coagulation

Results in EPODOC 15

[SS 6] 5 and sedimentation

Results in EPODOC 0

[SS 8] ..li

1/15 © EPODOC / EPO

PN - [KR101598493B](#) B1 20160229

PR - KR20150152185 20151030

AP - KR20150152185 20151030

DT - I

CT - || STSE (B1)
[JP2004143519](#) A 20040520 [
] (DENSO CORP);
[KR20040078173](#) A 20040909 [
] (JEONG HAE WANUNG)

CCA - [Y02W10/37](#)

PA - TTM CO LTD [KR]

TI - A TREATING **METHOD** FOR WASTE
WATER USING ELECTROLYSIS AND
WASTE WATER TREATING SYSTEM

AB - The present invention relates to
an **electrochemical wastewater
treatment** process. The technical
features of the present invention
are that the electrodeposition of a
pipe type (or duct
type) **electrochemical** apparatus is
used to promote the **treatment**
of **wastewater** through the
removal of metal ions; a plurality of
cyclone-shaped high-speed
electrolytic baths are provided at
the front end of
the **electrochemical** apparatus to
secure the primary filtration state
(removal of metal ions)
of **wastewater** through electrolytic
deposition; and a
chemical **treatment** process
(for **oxidation** and sterilization) is
added to at the rear end of the
high-speed electrolytic baths to
remove the cyan or ammonia
nitrogen component from

the **wastewater** after completing electrolytic **coagulation**, or promote the **oxidation** of organic materials. Therefore, the **electrochemical** apparatus of the present invention secures excellent sterilizing power (direct sterilization by the potential difference); satisfies the reaction time (1 min or longer) meeting legal standards; can be conveniently installed even in an existing discharge bath; has no need to separately prepare an undercurrent section, allowing very convenient maintenance and management (enabling unmanned automation); and significantly improves the **wastewater treatment** efficiency together with superior durability.

2/15 © EPODOC / EPO

PN - [US2016009583](#) A1 20160114

PR - US201514861549
20150922; US201213381173
20120306; WO2010CA00930
20100623; US20090221522P
20090629

AP - US201514861549 20150922

DT - **

CT - || R141 (A1)
[US2003173300](#) A1 20030918 [
] (BRADLEY KIRK D [US]);
[US3347786](#) A 19671017 [
] (ERHARDT BAER, et al);
[US2007199868](#) A1 20070830 [
] (VOLPE PATRICK J [AU]);
[US2002185446](#) A1 20021212 [
] (JOHNNY ARNAUD [US]);
[US2008149485](#) A1 20080626 [
] (CHILDERS HAROLD E [US], et al)
;

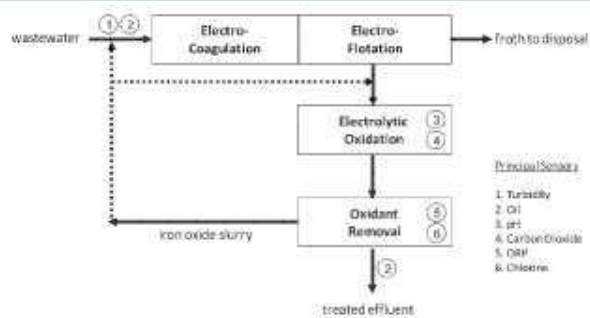


Figure 1

[US2009026088](#) A1 20090129 [] (SUMIDA YASUTERU [JP], et al);
[WO2008150541](#) A1 20081211 [] (SCHWARTZEL DAVID T [US], et al)

CTNP	- R141 (A1) [] - Moreno et al. "Electrochemical reactions for electrocoagulation using iron electrodes." Industrial & Engineering Chemistry Research. 4 March 2009. Vol. 48, Iss. 5. pp. 2275-2282, [] - Panizza et al. "Direct and mediated electrochemical oxidation of naphtalen- and anthraquinon-sulfonic acids." The Electrochemical Society (ECS) Meeting Abstracts. 29 April 2003.,
CCI	- C02F1/463 ; C02F1/465 ; C02F1/4674 ; C02F9/00
CUI	- C02F1/76
CCA	- C02F1/32 ; C02F2001/46138 ; C02F2103/002 ; C02F2103/005 ; C02F2103/008 ; C02F2103/08 ; C02F2201/46135 ; C02F2201/4614 ; C02F2201/46175 ; C02F2209/02 ; C02F2209/04 ; C02F2209/05 ; C02F2209/06 ; C02F2209/11 ; C02F2209/245 ; C02F2209/29 ; C02F2209/40
PA	- PROTERRGO INC [CA]
TI	- APPARATUS AND METHOD FOR ELECTROCHEMICAL TREATMENT OF WASTEWATER
AB	- The wastewater treatment apparatus of present invention has an electro- coagulation unit for removing contaminants with at least one anode and at least one cathode and an electro-

oxidation unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of **wastewater**, the apparatus can have an electro-flotation unit between the electrocoagulation unit and the electro-**oxidation** unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro-**coagulation** unit for increased efficiency.

3/15 © EPODOC / EPO

PN - [IN579DELNP2012](#) A 20150612

PR - US20090221522P
20090629; WO2010CA00930
20100623

AP - IN2012DELNP579 20120119

DT - I

CCI - [C02F1/463](#) ; [C02F1/465](#) ;
[C02F1/4674](#) ; [C02F9/00](#)

CUI - [C02F1/76](#)

CCA - [C02F1/32](#) ; [C02F2001/46138](#) ;
[C02F2103/002](#) ; [C02F2103/005](#) ;
[C02F2103/008](#) ; [C02F2103/08](#) ;
[C02F2201/46135](#) ;
[C02F2201/4614](#) ;
[C02F2201/46175](#) ; [C02F2209/02](#) ;
[C02F2209/04](#) ; [C02F2209/05](#) ;
[C02F2209/06](#) ; [C02F2209/11](#) ;
[C02F2209/245](#) ; [C02F2209/29](#) ;
[C02F2209/40](#)

PA - PROTERRGO INC [CA]

TI - APPARATUS AND METHOD
FOR ELECTROCHEMICAL
TREATMENT OF WASTEWATER

AB - The **wastewater treatment** apparatus of present invention has an electro-**coagulation** unit for removing contaminants with at least one anode and at least one cathode and an electro-**oxidation** unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of **wastewater**, the apparatus can have an electro-flotation unit between the electro not **coagulation** unit and the electro-**oxidation** unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro-**coagulation** unit for increased efficiency.

4/15 © EPODOC / EPO

PN - [CN104129875](#) A 20141105

PNFP - CN104129875B B 20151118

PR - CN20141406069 20140816

AP - CN20141406069 20140816

DT - I

CT - || STSE (A)
[CN102633341](#) A 20120815
[A] (INST PROCESS ENG CAS)
[A]
[CN103253800](#) A 20130821
[A] (JINCHILING GOLD MINE OF
ZHAOJIN MINING INDUSTRY CO

	LTD) [A] CN103253834 A 20130821 [A] (CHANGCHUN GOLD RES INST) [A]
PA	- (A) CHANGCHUN GOLD RES INST
TI	- (A) Cyanated wastewater treatment method
AB	- (A) The invention discloses a cyanated wastewater treatment method . The method consists of three steps, namely the step of carrying out electrochemical treatment , the step of carrying out coagulative precipitation treatment and the step of carrying out ozone/activated-charcoal catalytic oxidation treatment , wherein tractable cyanide is firstly removed by adopting an electrochemical treatment method , then, coagulative precipitation is carried out through adding a zinc sulfate solution and a coagulation agent, so as to remove metal cyanide complexes and heavy metal ions from the wastewater , and finally, pollutants, which are difficultly removed by chemical methods and coagulative precipitation, are removed from the wastewater by an ozone/activated-charcoal catalytic oxidation treatment system through the synergism of ozone and activated charcoal. According to the method , based on the characteristic that pollutants contained in the

cyanated **wastewater** of gold mines are complicated and intractable, an **electrochemical treatment** technology, a coagulative precipitation technology and an ozone/activated-charcoal catalytic **oxidation** technology are combined together and carry out deep **treatment** on the cyanated **wastewater** of the gold mines in a synergistic manner, thus, the **treatment** effect is good, the **treatment** efficiency is high, the system operation is stable, the process flow is simple, the realization of industrial application is facilitated, and the treated **wastewater** can be returned to the production process flow and used as reclaimed water or be discharged in a standardized manner.

5/15 © EPODOC / EPO

PN - [CN103395917](#) A 20131120

PNFP - CN103395917B B 20150923

PR - CN20131287402 20130710

AP - CN20131287402 20130710

DT - I

CT - || STSE (A)
[US7704390](#) B2 20100427
 [A] (LEFFLER CHARLES E [US], et al)
 [A]
[CN1803674](#) A 20060719
 [A] (UNIV YANGZHOU [CN])
 [A]
[CN102211830](#) A 20111012
 [A] (SHENZHEN LAND ECO ENVIRONMENT TECHNOLOGY CO LTD)

	[A] CN102276093 A 20111214 [A] [A]
CTNP	- STSE (A) [] 高洋, "电化学法改善烟草薄片废水 可生化性的研究", <<中国优秀硕 士学位论文全文数据库工程科技 I辑>>, (20130115)
PA	- (A) SHANG NINA
TI	- (A) Technology for treating high- concentration wastewater of tobacco sheet industry by electrochemical oxidation method
AB	- (A) The invention discloses a technology for treating high- concentration wastewater of tobacco sheet industry by an electrochemical oxidation method . The high- concentration wastewater is conveyed into a coagulating basin via a collection device, coagulant and flocculant are added into the coagulating basin for performing coagulation treatment , and sludge generated by reaction is discharged into a sludge treatment system; the liquid supernatant of reaction is conveyed to an electrochemical oxidation reaction tank for performing oxidation treatment , the liquid supernatant generated after reaction is mixed with the low-concentration wastewater , the mixture is conveyed to a low-

concentration **wastewater treatment** system, and the sludge generated by reaction is discharged into the sludge **treatment** system. With the technology provided by the invention, the chromaticity in water can be removed completely, the chromaticity of the system effluent is guaranteed to be less than 80 times, and the system effluent can reach the first grade of waste discharge standard; the substances which are difficult to degrade in the high-concentration **wastewater** can be removed, thus, the biodegradation capability of the whole system is improved.

6/15 © EPODOC / EPO

PN - [CN103112974](#) A 20130522

PNFP - CN103112974B B 20140723

PR - CN2013125352 20130122

AP - CN2013125352 20130122

DT - I

CT - || STSE (A)
[CN101234826](#) A 20080806
 [A] (DAYE NON FERROUS METALS CO LTD [CN])
 [A]
[CN101811795](#) A 20100825
 [Y] (CHANGSHA HUASHIJIE ENVIRONMENTAL PROT SCIENCE & TECHNOLOGY DEV CO LTD)
 [Y]
[CN101168450](#) A 20080430
 [Y] (TECHNOLOGY CT OF CHINA NAT GOL [CN])
 [Y]
[US2007256972](#) A1 20071108

	[A] (IMAI GENJI [JP], et al) [A]
PA	-(A B) CHANGSHA CHUANGXIANG ENVIRONMENTAL PROT TECHNOLOGY CO LTD
TI	-(A B) Treatment method of arsenic wastewater
AB	-(A) The invention discloses a treatment method of arsenic wastewater. The treatment method comprises the following steps: optionally adding acid liquor into the arsenic wastewater to adjust the pH value to 0-5; introducing the arsenic wastewater into a reaction unit, continuously removing arsenic by adding sulfide in multistage manner; carrying out solid-liquid separation on the effluent after reaction, recycling the separated arsenic slag; adding alkali into the separated effluent to perform electrochemical advanced treatment, wherein the electrochemical advanced treatment includes an electrolytic coagulation step, an electrolytic flotation step and an electrolytic oxidation reduction step, in the electrolytic coagulation, cations are generated by the electrolyzation of a soluble anodic iron plate for flocculation; carrying out aerated oxidation on the effluent after flocculation to generate floc and micelle sediment including ferric ions, and then carrying out solid-liquid

separation, wherein the liquid supernatant after separation can be recycled or reach the standard and drain outwards.

The **treatment method** of arsenic **wastewater** has the advantages of simple technology, low investment, low cost and high resource recovery and recycling rate, and being green and environment-friendly, and being capable of treating continuously and the like.

7/15 © EPODOC / EPO

PN - [CN202924856U](#) U 20130508

PR - CN20122589005U 20121109

AP - CN20122589005U 20121109

DT - I

PA - DONGGUAN DONGYUAN NEW
ENERGY TECHNOLOGY CO LTD

TI - High-voltage pulse electrolytic
reduction based chromium removal
device

AB - The utility model discloses a high-voltage pulse electrolytic reduction based chromium removal device. The device comprises a collecting tank, a first reaction tank, a high-voltage pulse electrolytic tank, a second reaction tank, a solid-liquid separation system and a third reaction tank. Compared with the traditional electrolytic methods in which low voltage and large current are adopted, the high-voltage pulse electrolytic **method** is characterized in that high voltage and low current are adopted and the **electrochemical** principles are adopted to generate **electrochemical** reaction

with the help of the action of additional high voltage to convert electric energy to chemical energy, then redox reaction can be carried out on organic or inorganic substances in **wastewater** by electrocoagulation equipment and then the pollutants are separated from the water through **coagulation** and flotation, so that phosphates in the **wastewater** can be effectively removed. Besides, in the aspects of equipment efficiency and environment protection, the removal efficiency of heavy metals treated by the high-voltage pulse electrolytic **oxidation method** is high, secondary pollution can be avoided and the treated heavy metals can be recycled. The **method** can be used for independently treating some kind of **wastewater** or the **wastewater** in a process and can be combined with other technologies flexibly to carry out composite **treatment**.

8/15 © EPODOC / EPO

PN - [CN102849893](#) A 20130102

PNFP - CN102849893B B 20140813

PR - CN20121275572 20120806

AP - CN20121275572 20120806

DT - I

CT - || STSE (A)
[WO2010133177](#) A1 20101125
 [A] (SHANGHAI TONGJI
 CONSTRUCTION TECHNOLOGY CO
 LTD [CN], et al)
 [A] 1-5
 全文
[CN102515442](#) A 20120627
 [Y] (BLUESTAR ENVIRONMENT

	ENGINEERING CO LTD) [Y] 1-5 说明书第2-3页第0016-0021段 CN101734817 A 20100616 [Y] (JIANGSU SUJING PURIFICATION GR, et al) [Y] 1-5 说明书第1-2页第0012-0018段及 说明书第4页0031段 CN102001775 A 20110406 [A] (BLUE STAR ENVIRONMENTAL ENGINEERING CO LTD) [A] 1-5 全文
PA	-(A B) NANJING KISEN INT ENG CO LTD
TI	-(A B) Treatment method of high-concentration nondegradable organic wastewater
AB	-(A) The invention discloses a treatment method of high-concentration nondegradable organic wastewater, which comprises the following steps: carrying out coagulation floatation pretreatment to remove suspended substances in water and partially lower COD (chemical oxygen demand) in wastewater; carrying out iron carbon micro-electrolysis to remove partial organic substances in the wastewater and enhance the B/C value under the electrochemical action, redox and the like, wherein the one-step removal rate of the COD is up to higher than 50%; carrying out ultraviolet Fenton oxidation: under the irradiation of an

ultraviolet lamp with corresponding power, adding H₂O₂ to carry out ultraviolet Fenton **oxidation**, and regulating the pH value to carry out coagulative precipitation; and carrying out A₂/O biochemical **treatment** to finally decompose the pollutants into carbon dioxide and water, wherein the quality of the produced water is stable. The ultraviolet Fenton **oxidation** reactor is arranged after the micro-electrolysis, thereby lowering the consumption of H₂O₂ and further enhancing the biochemical quality of **wastewater**; and the MBR (membrane bioreactor) adopts a plate membrane element to overcome the defects of low mechanical strength and high cracking tendency in the hollow fiber membrane element, so that the quality of the produced water is high and stable.

9/15 © EPODOC / EPO

PN - [CN102781846](#) A 20121114

PNFP - CN102781846B B 20150408

PR - WO2010CA00930
20100623; US20090221522P
20090629

AP - CN2010829442 20100623

DT - I

CT - || STSE (A)
[US2003205535](#) A1 20031106
[A] (ROTH WILLIAM JEFFREY [US])
[A]
[US6960301](#) B2 20051101
[A] (BRADLEY KIRK D [US])

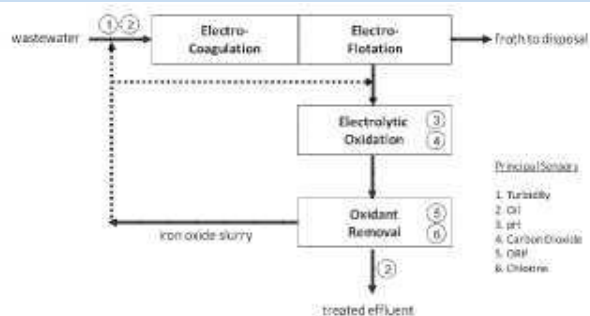


Figure 1

[A]
[CN1512967](#) A 20040714 [A] (C & M GROUP LLC [US])
 [A]
[CN1382638](#) A 20021204
 [A] (ECOLOGICAL ENVIRONMENT RES CET [CN])
 [A]
[CN2076099U](#) U 19910501
 [A] (AVIAT IND PLANNING DESIGN I MI [CN])
 [A]
[GB654728](#) A 19510627
 [A] (ROTTERDAM GEMEENTE)
 [A]
[CN1522968](#) A 20040825
 [A] (UNIV DALIAN TECH [CN])
 [A]
[CN101376548](#) A 20090304
 [A] (WEIGUANG YUAN [CN])
 [A]
[CA2689646](#) A1 20081211
 [A] (SCHWARTZEL DAVID T [US], et al)
 [A]
[CN1565984](#) A 20050119 [A] (RES CT ECO ENVIRONMENTAL SCIEN [CN])
 [A]

CCI - [C02F1/463](#) ; [C02F1/465](#) ;
[C02F1/4674](#) ; [C02F9/00](#)

CUI - [C02F1/76](#)

CCA - [C02F1/32](#) ; [C02F2001/46138](#) ;
[C02F2103/002](#) ; [C02F2103/005](#) ;
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[C02F2201/46175](#) ; [C02F2209/02](#) ;
[C02F2209/04](#) ; [C02F2209/05](#) ;
[C02F2209/06](#) ; [C02F2209/11](#) ;
[C02F2209/245](#) ; [C02F2209/29](#) ;
[C02F2209/40](#)

PA	- (A B) PROTERRGO INC
TI	-(A B) Apparatus and method for electrochemical treatment of wastewater
AB	-(A) The wastewater treatment apparatus of present invention has an electro- coagulation unit for removing contaminants with at least one anode and at least one cathode and an electro- oxidation unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of wastewater , the apparatus can have an electro-flotation unit between the electro- coagulation unit and the electro- oxidation unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro- coagulation unit for increased efficiency.

10/15 © EPODOC / EPO

PN - [MX2011013960](#) A 20120508

PR - US20090221522P
20090629; WO2010CA00930
20100623

AP - MX20110013960 20100623

DT - I

CCI - [C02F1/463](#) ; [C02F1/465](#) ;
[C02F1/4674](#) ; [C02F9/00](#)

CUI - [C02F1/76](#)

CCA - [C02F1/32](#) ; [C02F2001/46138](#) ;
[C02F2103/002](#) ; [C02F2103/005](#) ;
[C02F2103/008](#) ; [C02F2103/08](#) ;
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[C02F2201/4614](#) ;
[C02F2201/46175](#) ; [C02F2209/02](#) ;
[C02F2209/04](#) ; [C02F2209/05](#) ;
[C02F2209/06](#) ; [C02F2209/11](#) ;
[C02F2209/245](#) ; [C02F2209/29](#) ;
[C02F2209/40](#)

PA - PROTERRGO INC [CA]

TI - APPARATUS AND METHOD
FOR **ELECTROCHEMICAL**
TREATMENT OF WASTEWATER.

AB - The **wastewater treatment** apparatus of present invention has an electro-**coagulation** unit for removing contaminants with at least one anode and at least one cathode and an electro-**oxidation** unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of **wastewater**, the apparatus can have an electro-flotation unit between the electro-**coagulation** unit and the electro-**oxidation** unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro-**coagulation** unit for increased efficiency.

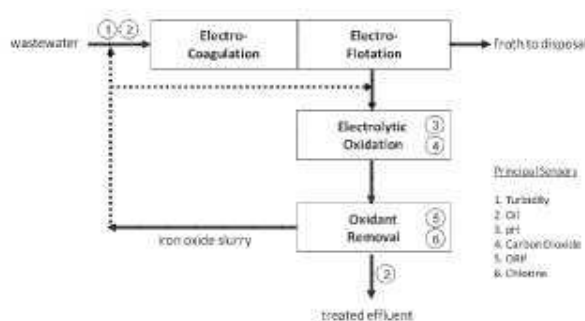


Figure 1

PN - [US2012160706](#) A1 20120628

PR - US201013381173
20100623; US20090221522P
20090629; WO2010CA00930
20100623

AP - US201013381173 20100623

DT - **

CT - || R141 (A1)
[US2008149485](#) A1 [];
[US2003173300](#) A1 [];
[US2005230321](#) A1 [];
[US2004206624](#) A1 [];
[US2006016689](#) A1 [];
[US2004219090](#) A1 [];
[GB654728](#) A [];
[US4414091](#) A [];
[WO2007065228](#) A1 [];
[US6245210](#) B1 []

CCI - [C02F1/463](#) ; [C02F1/465](#) ;
[C02F1/4674](#) ; [C02F9/00](#)

CUI - [C02F1/76](#)

CCA - [C02F1/32](#) ; [C02F2001/46138](#) ;
[C02F2103/002](#) ; [C02F2103/005](#) ;
[C02F2103/008](#) ; [C02F2103/08](#) ;
[C02F2201/46135](#) ;
[C02F2201/4614](#) ;
[C02F2201/46175](#) ; [C02F2209/02](#) ;
[C02F2209/04](#) ; [C02F2209/05](#) ;
[C02F2209/06](#) ; [C02F2209/11](#) ;
[C02F2209/245](#) ; [C02F2209/29](#) ;
[C02F2209/40](#)

PA - POIRIER NICOLE A [CA]; LEVEILLE
VALERIE [CA]; PROTERRGO INC [CA]

TI - APPARATUS AND METHOD
FOR ELECTROCHEMICAL
TREATMENT OF WASTEWATER

AB - The **wastewater treatment**
apparatus of present invention has
an electro-**coagulation** unit for
removing contaminants with at
least one anode and at least one
cathode and an electro-**oxidation**

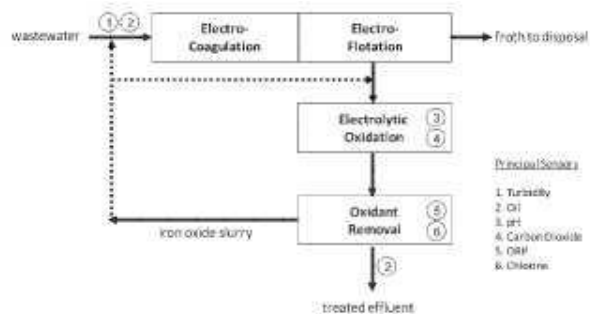


Figure 1

unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of **wastewater**, the apparatus can have an electro-flotation unit between the electro-coagulation unit and the electro-oxidation unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro-coagulation unit for increased efficiency.

12/15 © EPODOC / EPO

PN - [AU2010268710](#) A1 20120209

PNFP - AU2010268710B B2 20151008

PR - US20090221522P
20090629; WO2010CA00930
20100623

AP - AU20100268710 20100623

DT - I

CT - || STSE (B2)
[CA2689646](#) A1 20081211 [] (SCHWARTZEL DAVID T [US], et al)
[GB654728](#) A 19510627 []
[US6960301](#) B2 20051101 [] (BRADLEY KIRK D [US])
[US2003205535](#) A1 20031106 [] (ROTH WILLIAM JEFFREY [US])
[XP004053175](#) A 00000000 []

CTNP - || STSE (B2)
[] ZABOLOTSKY V I ET AL:
"Electrodialysis technology for deep
demineralization of surface

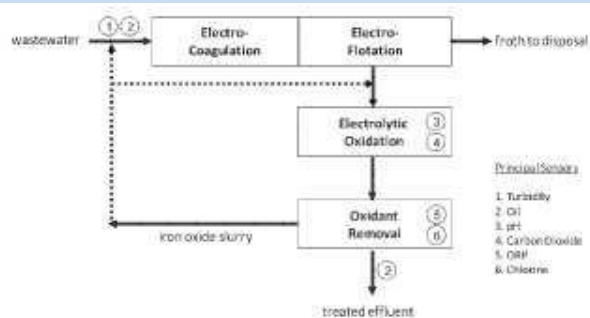


Figure 1

and ground water",
DESALINATION, ELSEVIER,
AMSTERDAM, NL, vol . 108, no. I,
1

February 1997 (1997-02-01),
pages 179-181, XP004053175

CCI	- C02F1/463 ; C02F1/465 ; C02F1/4674 ; C02F9/00
CUI	- C02F1/76
CCA	- C02F1/32 ; C02F2001/46138 ; C02F2103/002 ; C02F2103/005 ; C02F2103/008 ; C02F2103/08 ; C02F2201/46135 ; C02F2201/4614 ; C02F2201/46175 ; C02F2209/02 ; C02F2209/04 ; C02F2209/05 ; C02F2209/06 ; C02F2209/11 ; C02F2209/245 ; C02F2209/29 ; C02F2209/40
PA	- (A1 B2) PROTERRGO INC
TI	-(A1 B2) Apparatus and method for electrochemical treatment of wastewater
AB	-(A1 B2) The wastewater treatment apparatus of present invention has an electro- coagulation unit for removing contaminants with at least one anode and at least one cathode and an electro- oxidation unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of wastewater , the apparatus can have an electro-flotation unit between the electro- coagulation unit and the electro- oxidation unit. The

apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro-**coagulation** unit for increased efficiency.

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PN - [CA2766832](#) A1 20110106

PR - US20090221522P
20090629; WO2010CA00930
20100623

AP - CA20102766832 20100623

DT - I

CCI - [C02F1/463](#) ; [C02F1/465](#) ;
[C02F1/4674](#) ; [C02F9/00](#)

CUI - [C02F1/76](#)

CCA - [C02F1/32](#) ; [C02F2001/46138](#) ;
[C02F2103/002](#) ; [C02F2103/005](#) ;
[C02F2103/008](#) ; [C02F2103/08](#) ;
[C02F2201/46135](#) ;
[C02F2201/4614](#) ;
[C02F2201/46175](#) ; [C02F2209/02](#) ;
[C02F2209/04](#) ; [C02F2209/05](#) ;
[C02F2209/06](#) ; [C02F2209/11](#) ;
[C02F2209/245](#) ; [C02F2209/29](#) ;
[C02F2209/40](#)

PA - PROTERRGO INC [CA]

TI - APPARATUS AND **METHOD**
FOR ELECTROCHEMICAL
TREATMENT OF WASTEWATER

AB - The **wastewater treatment** apparatus of present invention has an electro-**coagulation** unit for removing contaminants with at least one anode and at least one cathode and an electro-**oxidation** unit for oxidizing contaminants

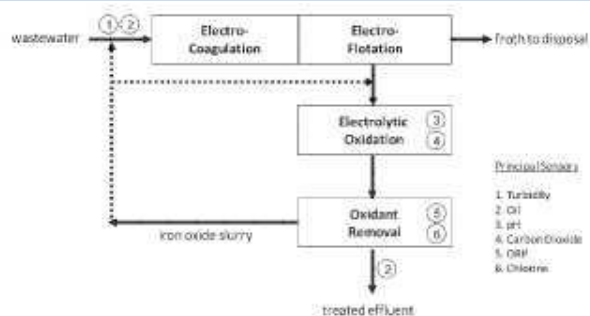


Figure 1

with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of **wastewater**, the apparatus can have an electro-flotation unit between the electro-**coagulation** unit and the electro-**oxidation** unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro-**coagulation** unit for increased efficiency.

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PN - [WO2011000079](#) A1 20110106

PR - US20090221522P 20090629

AP - WO2010CA00930 20100623

DT - *; Rep

CT - |CA| ISR (A1)
[US6960301](#) B2 20051101
 [X] (BRADLEY KIRK D [US]);
[US2003205535](#) A1 20031106
 [X] (ROTH WILLIAM JEFFREY [US]);
[GB654728](#) A 19510627
 [X] (ROTTERDAM GEMEENTE);
[CA2689646](#) A1 20081211
 [X] (SCHWARTZEL DAVID T [US], et al)

CCI - [C02F1/463](#) ; [C02F1/465](#) ;
[C02F1/4674](#) ; [C02F9/00](#)

CUI - [C02F1/76](#)

CCA - [C02F1/32](#) ; [C02F2001/46138](#) ;
[C02F2103/002](#) ; [C02F2103/005](#) ;
[C02F2103/008](#) ; [C02F2103/08](#) ;
[C02F2201/46135](#) ;
[C02F2201/4614](#) ;
[C02F2201/46175](#) ; [C02F2209/02](#) ;

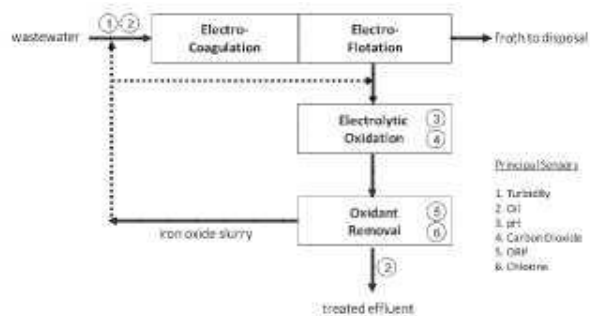


Figure 1

	C02F2209/04 ; C02F2209/05 ; C02F2209/06 ; C02F2209/11 ; C02F2209/245 ; C02F2209/29 ; C02F2209/40
PA	- PROTERRGO INC [CA]; POIRIER NICOLE A [CA]; LEVEILLE VALERIE [CA]
TI	- APPARATUS AND METHOD FOR ELECTROCHEMICAL TREATMENT OF WASTEWATER
AB	- The wastewater treatment apparatus of present invention has an electro- coagulation unit for removing contaminants with at least one anode and at least one cathode and an electro- oxidation unit for oxidizing contaminants with at least one anode and at least one cathode wherein oxidants are electrochemically generated. Based on the type of wastewater , the apparatus can have an electro- flotation unit between the electro- coagulation unit and the electro- oxidation unit. The apparatus also has an oxidant removal unit which can have a metal ion-liberating electrode for reacting with and removing residual oxidants. In some cases, portions of effluent from the oxidant removal unit can be recirculated to the electro- coagulation unit for increased efficiency.

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PN	- CN101774715 A 20100714
PNFP	- CN101774715B B 20130227
PR	- CN20101120877 20100310
AP	- CN20101120877 20100310
DT	- I

CT	-(A) CN1733625 A []; CN101468861 A []; JP2004122098 A []; GB2449176 A []; WO0198213 A1 []
PA	-(A B) UNIV SOUTH CHINA NORMAL
TI	-(A B) System and method for advanced treatment and reuse of dyeing wastewater
AB	-(A) The invention discloses a system and method for advanced treatment and reuse of dyeing wastewater. The system comprises an intermediate pool, an acidification pool, a brine pool, an electrochemical system, a pH neutralizing pool and a reuse pool, wherein the intermediate pool, the acidification pool, the electrochemical system, the pH neutralizing pool and the reuse pool are sequentially connected, the input end of the salt water pool is connected with the intermediate pool; and the output end thereof is connected with the electrochemical system. The method comprises the steps: tail water after undergoing the traditional anaerobic-aerobic-coagulation treatment of dyeing wastewater is equalized in quantity and quality in the intermediate pool and then is led into the acidification pool, the pH value of the tail water is adjusted to be acidic by sulphuric acid, and the acidified tail water is pumped into the electrochemical system;

the tail water is mixed with strong brine from the brine pool and then is treated by electrolytic **oxidation**; and then the tail water after undergoing the electrolytic **oxidation** is led into the pH neutralizing pool, the Ph value of the tail water is adjusted to 7 to 9 by caustic soda, and finally the tail water is sent to the reuse pool to be discharged or reused. The invention does not need add any oxidant and reductant, and has low operation cost and no secondary pollution.

[SS 8]