

(HUANJING KEXUE)

ENVIRONMENTAL SCIENCE

第35卷 第1期

Vol.35 No.1

2014

中国科学院生态环境研究中心 主办

斜 学 出 版 社 出版



ENVIRONMENTAL SCIENCE

第35卷 第1期 2014年1月15日

目 次

	`
务4里77米州四北水冶区外间积及 FM _{2.5} 可决泰路的健康//	,
雾霾重污染期间北京居民对高浓度 PM _{2.5} 持续暴露的健康风险及其损害价值评估 谢元博,陈娟,李巍(1 长白山 PM _{2.5} 中水溶性离子季节变化特征研究 赵亚南,王跃思,温天雪,戴冠华(9 青岛大气颗粒物数浓度变化及对能见度的影响 柯馨姝,盛立芳,孔君,郝泽彤,屈文军(15)
青岛大气颗粒物数浓度变化及对能见度的影响 村馨姝,盛立芳,孔君,郝泽彤,屈文军(15)
重庆市大气二匹英污染水平及季节变化 张晓岭,卢益,朱明吉,蹇川,郭志顺,邓力,孙静,张芹,罗财红(22)
西南地区再生铝冶炼行业二哌英大气排放 卢益,张晓岭,郭志顺,蹇川,朱明吉,邓力,孙静,张芹(30)
西南地区新型干法水泥生产中的二噁英大气排放 张晓岭,卢益,蹇川,郭志顺,朱明吉,邓力,孙静,张芹(35)
- D. III-) - I. D. II- P. J. D. I. J. D. A. D. D. A. D.	
模拟不同排放源排放颗粒及多环芳烃的粒径分布研究	í
川东北地区元素大气沉降通鼻及其季节变化	í
青庄市结山坡 2001。2010 年齡沉降亦化 — 全海祥 马苇苇 河烟)
杭州市办公场所至内空气中 PBDEs 的污染现状与特征 将欣慰,孙鑫,裴小强,金漫形,李云龙,沈字优(41 模拟不同排放源排放颗粒及多环芳烃的粒径分布研究 符海欢,田娜,商惠斌,张彬,叶素芬,陈晓秋,吴水平(46 川东北地区元素大气沉降通量及其季节变化 童晓宁,周厚云,游镇烽,汤静,刘厚均,黄颖,贺海波(53 重庆市铁山坪 2001~2010 年酸沉降变化 余德祥,马萧萧,谭炳全,赵大为,张冬保,段雷(60 汉江上游金水河流域氮湿沉降 王金杰,张克荣,吴川,张全发(66 麦秸及其烟尘中正构脂肪酸的组成 刘刚,李久海,吴丹,徐慧(73 兰州市室内大气降尘环境磁学特征及其随高度变化研究 吴铎,魏海涛,赵瑞瑞,张蕊,刘建宝(79 中亚热带针阔混交林土壤-大气界面释汞通量研究 马明,王定勇,申源源,孙荣国,黄礼昕(85 水稻秸秆生物炭对耕地土壤有机碳及其 CO ₂ 释放的影响 柯跃进,胡学玉,易卿,余忠(93 黄海和东海海域溶解铋地球化学分布特征 吴晓丹,宋金明,吴斌,李学刚(100 浑河上游(清原段)水环境中重金属时空分布及污染评价 马迎群,时瑶,秦延文,郑丙辉,赵艳民,张雷(108)
(X.仁工///) 建水闩机, 以须, 似. (M.) 以, 水, 大川, 木, 木, 大川, 木, 木, 大川, 木, 木, 大川, 木, 大, 大川, 木, 大,	/
友情及共阳至中上性构脂加酸的组取)
三州巾室内人气降尘外境幽学特征及其随高度变化研究 ————————————————————————————————————)
中业热带针阔泥交林土壤-大气界面释汞迪量研究)
水稻秸秆生物炭对耕地土壤有机碳及其 CO ₂ 释放的影响 柯跃进,胡学玉,易卿,余忠(93)
黄海和东海海域溶解铋地球化学分布特征 吴晓丹,宋金明,吴斌,李学刚(100)
浑河上游(清原段)水环境中重金属时空分布及污染评价 马迎群,时瑶,秦延文,郑丙辉,赵艳民,张雷(108)
POCIS 采样技术应用于九龙江流域水环境中雌激素的检测)
降雨条件下岩溶地下水微量元素变化特征及其环境意义 陈雪彬, 杨平恒, 蓝家程, 莫雪, 师阳(123)
福林河流域地表水水化学主喜子特征及控制因素·	/
- Managara Panagara	`
一	/
J 7 何小尔·西加烈杀虫风及军问刀·甲存证。)
水稻种植对中业热带红壤丘陵区小流域氮磷养分输出的影响 宋立芳,王毅,吴金水,李勇,李裕元,孟岑,李航,张满意(150 黄东海表层沉积物中磷的分布特征 宋国栋,刘素美,张国玲(157 河流沉积物中有机磷提取剂(NaOH-EDTA)提取比例与机制研究 张文强,单保庆,张洪,唐文忠(163 沉积物短期扰动下 BAPP 再生和转化机制 武晓飞,李大鹏,汪明(171 三峡库区典型农村型消落带沉积物风险评价与重金属来源解析 敖亮,雷波,王业春,周谐,张晟(179 太湖东部不同类型湖区疏浚后沉积物重金属污染及潜在生态风险评价	`
*************************************)
更乐海表层沉积初中磷的分布特征 · · · · · · · · · · · · · · · · · · ·)
河流沉积物中有机磷提取剂(NaOH-EDTA)提取比例与机制研究 ····································)
沉积物短期扰动下 BAPP 再生和转化机制 武晓飞,李大鹏,汪明(171)
三峡库区典型农村型消落带沉积物风险评价与重金属来源解析 敖亮,雷波,王业春,周谐,张晟(179)
太湖东部不同类型湖区疏浚后沉积物重金属污染及潜在生态风险评价	
)
滇池沉积物中主要污染物含量时间分异特征研究 王心宇,周丰,伊旋,郭怀成(194)
浓度层析荧光光谱局部匹配溢油鉴别技术)
光电 Fenton 技术处理污泥深度脱水液研究 · · · · · · · · · · · · · · · · · · ·	í
同步脱氧除磷颗粒污泥硝化反硝化特性试验研究	í
为好情拥名淡波流玩程大物的复数长期络字收守验研究	1
为公公全公司的证据从证上了的历史的任务中的一个专家的方面, 如)
太湖东部不问类型湖区城沒后讥帜物里金属污染及浴任生态风应评价)
水稻光合同化碳在土壤中的矿化和转化动态 ········ 谭立敏,彭佩钦,李科林,李宝珍,聂三安,葛体达,童成立,吴金水(233土地利用及退耕对喀斯特山区土壤活性有机碳的影响 ·········· 廖洪凯,李娟,龙健,张文娟,刘灵飞(240)
工地利用及逐种利格别特坦区工集活性有机恢的影响)
水稻土团聚体 Cu²+吸附过程中铝的溶出及土壤溶液 pH 变化 许海波,赵道远,秦超,李玉姣,董长勋(248)
Cr(Ⅵ)对两种黏土矿物在单一及复合溶液中Cu(Ⅱ)吸附的影响 ············· 刘娟娟,梁东丽,吴小龙,屈广周,钱勋(254)
· 海水时长对 2 种从枝蓿相 (AM) 直蓿侵氿 2 种湿肿植物的影响	/
他小时以AJ 5 什么仅图依(AM) 具图反来 2 件业地值初时影响 与 百 值,工府商,工 店 允(203)
太湖水质与水生生物健康的关联性初探 ··················周笑白,张宁红,张咏,牛志春,刘雷,于红霞(271))
太湖水质与水生生物健康的关联性初探 ····································)))
Cr(Ⅵ)对两种黏土矿物在单一及复合溶液中Cu(Ⅱ)吸附的影响)
- 基制药废水对发光细菌刍性毒性的评价研究 杜丽娜 杨帆 穆玉峰 全芸術 左剑恶 高俊发 全忻 滕丽君 汤薪琛(286))
- 基制药废水对发光细菌刍性毒性的评价研究 杜丽娜 杨帆 穆玉峰 全芸術 左剑恶 高俊发 全忻 滕丽君 汤薪琛(286))
- 基制药废水对发光细菌刍性毒性的评价研究 杜丽娜 杨帆 穆玉峰 全芸術 左剑恶 高俊发 全忻 滕丽君 汤薪琛(286))
某制药废水对发光细菌急性毒性的评价研究 ··· 杜丽娜, 杨帆, 穆玉峰, 余若祯, 左剑恶, 高俊发, 余忻, 滕丽君, 汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 ····································)
某制药废水对发光细菌急性毒性的评价研究 ··· 杜丽娜, 杨帆, 穆玉峰, 余若祯, 左剑恶, 高俊发, 余忻, 滕丽君, 汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 ····································)
某制药废水对发光细菌急性毒性的评价研究 ··· 杜丽娜, 杨帆, 穆玉峰, 余若祯, 左剑恶, 高俊发, 余忻, 滕丽君, 汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 ····································)
某制药废水对发光细菌急性毒性的评价研究 ··· 杜丽娜, 杨帆, 穆玉峰, 余若祯, 左剑恶, 高俊发, 余忻, 滕丽君, 汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 ····································)
某制药废水对发光细菌急性毒性的评价研究 ··· 杜丽娜, 杨帆, 穆玉峰, 余若祯, 左剑恶, 高俊发, 余忻, 滕丽君, 汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 ····································)
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·)))))))
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·)))))))
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·)))))))))
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·)))))))))
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·)))))))))))
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·	
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·	
某制药废水对发光细菌急性毒性的评价研究	
某制药废水对发光细菌急性毒性的评价研究 · · · 杜丽娜,杨帆,穆玉峰,余若祯,左剑恶,高俊发,余忻,滕丽君,汤薪瑶(286 异丙甲草胺与锌共存对斜生栅藻毒性手性差异影响 · · · · · · · · · · · · · · · · · · ·	

太湖水质与水生生物健康的关联性初探

周笑白1,2,张宁红2,张咏2,牛志春2,刘雷2,于红霞1*

(1. 南京大学环境学院,南京 210046; 2. 江苏省环境监测中心,南京 210036)

摘要:分别利用内梅罗指数法和底栖动物完整性指数法评价 2008~2012 年太湖水质和水生生物健康状况. 结果表明,太湖全湖水质受到污染,水生生物健康基本处于亚健康状态. 水质评价和水生生物评价结果在较大的尺度上呈现相同的趋势:从全湖尺度上看,水质和水生生物评价都显示东太湖的水生态健康状况总体上好于太湖其他部分. 从时间上看,2008~2012 年太湖水质等级和水生生物健康状况均低于 20 世纪 60 年代的水平. 两种评价结果在短时间尺度和某些点位间存在差异,这是由于:①两种评价方法关注的时间尺度有所差异;②水生生物健康不仅与水质有关,还与水体生境有关. 有机污染物和过剩营养盐是影响太湖水质和水生生物健康状况的主要因素,因此降低太湖及其入湖河流中有机污染物和营养盐的浓度是改善太湖水质和水生态功能的有效方法.

关键词:水质评价; 水生生物健康评价; 内梅罗指数法; 底栖动物完整性指数法; 太湖

中图分类号: X826 文献标识码: A 文章编号: 0250-3301(2014)01-0271-08

Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake

ZHOU Xiao-bai^{1,2}, ZHANG Ning-hong², ZHANG Yong², NIU Zhi-chun², LIU Lei², YU Hong-xia¹ (1. School of the Environment, Nanjing University, Nanjing 210046, China; 2. Environmental Monitoring Center of Jiangsu Province, Nanjing 210036, China)

Abstract: Nemerow index method and benthic index of biological integrity method have been used to evaluate the water quality and the health status of aquatic organisms in Taihu Lake during 2008-2012, respectively. The results showed that the water in the whole Taihu Lake was polluted, and the aquatic organisms were basically kept in sub-health state. The results of the water quality and aquatic biological assessment exhibited generally the same trend at a large scale. In the view of the whole lake, the water quality and aquatic health status in East Taihu Lake were better than those of the other parts. In the view of time, the water quality and aquatic health status during 2008-2010 were worse than those of the lake in the 1960s. The results observed from the two assessment methods were not the same during short periods of time and in some special sample points, which were attributed to the following reasons: ① the two assessment methods focused on different time scales and ② the aquatic biological health status was related to the water quality as well as the environmental habitat. Since organic pollutants and excessive nutrients were the main factors influencing the water quality and aquatic health status, reducing the concentrations of the organic pollutants and inorganic nutrients should be a feasible method to improve the water quality and the ecological function of Taihu Lake.

Key words: water quality assessment; aquatic biological assessment; nemerow index method; benthic index of biological integrity method; Taihu Lake

人类在开发利用太湖的水资源过程中,将大量污染物和营养盐不断排入太湖,严重影响了太湖水环境安全和水生态功能^[1,2].为了解太湖水环境状况,制定合理的太湖开发和管理措施,我国对太湖进行了例行水质监测评价和多次水生生物监测评价^[3-5].

水质和水生生物监测和评价都为太湖管理提供了理论依据,但两种评价方法存在分歧.如从20世纪90年代开始太湖水质恶化趋势得到初步遏制,总磷、总氮、COD和BOD等主要污染指标均有所好转,但蓝藻水华在1999~2007年间发生面积和持续时间却有所增长,水生生物健康状况恶化^[6].评价结果的差异为太湖的管理和治理提出了难题.分析

两种方法评价结果的异同,对太湖水资源管理和水 环境保护具有非常重要的意义.

本研究在太湖湖体布设了 9 个点位,评估了 2008~2012 年的湖区水质和水生生物健康状况. 水质评价选用国内外较为常用的内梅罗指数法,水生生物评价选用底栖动物完整性指数评价法^[7]. 底栖动物在湖泊生态系统的物质循环和能量流动中起到承上启下的作用^[8],且活动性较差,能反映区域水

收稿日期:2013-04-28;修订日期:2013-06-06

基金项目:国家 水 体 污 染 控 制 与 污 染 治 理 科 技 重 大 专 项 (2012ZX07506-004); 江苏省博士后基金项目(1202061C)作者简介:周笑白(1982~),女,博士,主要研究方向为环境生态学,

E-mail;dianadeweyzp@ 163. com * 通讯联系人,E-mail;yuhx@ nju. edu. cn

环境变化.基于底栖动物的生物完整性指数作为一种综合性生物评价方法已经被广泛应用于北美、欧洲和我国的河流及湖泊水生生物监测中^[9~13].本研究旨在分析太湖水质和水生生物健康评价结果,初步探讨改善太湖水生态环境的方法.

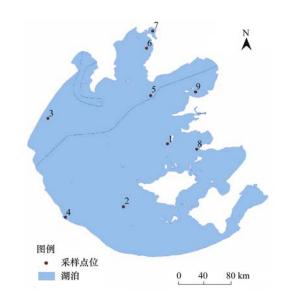
1 材料与方法

1.1 采样点布设和样品采集

本研究采样点分布如图 1 所示.

水质监测指标包括透明度、溶解氧、电导率、高锰酸盐指数、五日生化需氧量(BOD₅)、总氮(TN)、氨氮(NH₄⁺-N)和总磷(TP). 现场使用 YSI 6600V2 型多参数水质监测仪测定水体表层电导率及溶解氧,观测样点水体透明度. 采集1 000 mL 水样冷冻保存,带回实验室测定总氮、总磷、氨氮、高锰酸盐指数和五日生化需氧量,处理和检测方法详见文献[14]. 底栖动物采样所用的仪器为开口面积为 1/16 m² 的彼得逊采样器,每个样点采样 3 次. 采集的样品过 450 μm 的滤网后盛装在棕色试剂瓶中(500 mL)带回实验室处理. 将样品置于白瓷盘中,人工拣选活体后加入 8%的福尔马林溶液固定,并在显微镜下鉴定样品种类并计数.

1.2 底栖动物完整性指数评价



采样点名称:1. 漫山; 2. 十四号灯标; 3. 大浦口; 4. 新塘港; 5. 沙渚; 6. 小湾里; 7. 五里湖心; 8. 渔洋山; 9. 金墅港 图1 太湖采样点分布示意

Fig. 1 Locations of the sampling sites in Taihu Lake

1.2.1 生物指标的选择

为表征底栖动物的丰富度、耐污性、多样性和结构组成,本研究综合考虑了太湖底栖动物组成和国内外底栖动物完整性评价的案例,选择总分类单元数、个体数量等多种生物参数(见表 1)^[8,13].

表 1 候选生物指标及其对干扰的反应1)

Table 1 Candidate metrics and their expected response to disturbance

指标类型	参数名称	参数描述	对干扰的反应
	优势种比例	优势种个体数占总个体数比例	增加
反映物种丰富度	总分类单元数	底栖动物种类数	降低
	总个体数	单位面积内底栖动物个体总数	降低
	BI 指数	整体的污染评估,公式为: BI = $(\sum_{i=0}^{n} TV_{i}S_{i})/S$	升高
反映物种耐污程度	优势种耐污值	优势种的耐污能力	升高
及欧物州 侧扫性及	Goodnight 指数	寡毛纲个体占总个体的比例: $S_{\mathrm{g} \in \mathfrak{g}}/S$	升高
	BPI 指数	$\mathrm{BPI} = \lg(N_1+2)/\big[\lg(N_2+2)+\lg(N_3+2)\big]$	升高
	香农维纳指数	多样性指数: $H = -\sum_{i=0}^{n} P_i \times \ln P_i$	降低
反映种群多样性	辛普森指数	多样性指数: $D = 1 - \sum_{i=0}^{n} P_{i}^{2}$	降低
	Pielou 指数	均匀度指数: $E = H/H_{\text{max}} = H/\ln S$	降低
	Margalef 指数	丰富度指数:D=(S-1)/lnN	降低
	寡毛纲数量	寡毛纲总个体数	升高
个体数量及比例	瓣鳃纲数量	瓣鳃纲总个体数	升高
一件从至久记り	腹足纲数量	腹足纲总个体数	降低
	摇蚊数量	摇蚊总个体数	升高
	瓣鳃纲丰度	瓣鳃纲个体占总个体的比例: $S_{జఱ m}/S$	升高
个体比例	腹足纲丰度	腹足纲个体占总个体的比例: $S_{ ext{BLM}}/S$	降低
	摇蚊丰度	摇蚊个体占总个体的比例: $S_{ ext{ iny E}}/S$	升高

¹⁾ S 表示生物个体数量; S_i 表示第 i 种生物的个体数量;N 表示生物种类数;P 表示每种生物所占的比例,即 $P = S_i/S$; TV_i 为第 i 个生物单元的耐污值,本研究中耐污值选自文献[15]

1.2.2 参照点的选取

太湖流域人类活动频繁,湖体无未受人类干扰 的地区. 在以往的太湖参照点选择中,马陶武等[4] 重点考虑了湖泊污染程度,应用了 HBI 法选择污染 程度较低的点作为参照点. 而高欣等[13] 考虑生态 系统的复杂性,选用大型底栖动物多样性指数较高, 理化指标较好的点作为参照点. 本研究肯定了耐污 性和多样性在生态体系健康中的重要作用,同时也 考虑群落丰富度和清洁种、耐污种个体数量及比例 在生态系统健康程度中的指示作用,选择了多种参 数共同衡量各个样点的健康程度,并筛选生物健康 状况较好的样点作为参照点. 方法如下:计算各采 样点的候选生物指数,并计算其值的频度分布:最小 值、10%分位数、50%分位数、90%分位数、最高 值. 对于随污染胁迫增加而降低的参数,高于 50% 分位值、10%~50%分位值和低于10%分位值的点 位分别记5、3、1分. 对随污染胁迫增加而数值增 加的参数,则低于50%的分位值、50%~90%分位 值和高于90%分位值分别记为5、3、1分[4]. 计算 所有点位的总分值,并选取17个分值较高的点位作 为参照点.

1.2.3 候选生物的选定基赋分

(1)判别能力分析

为消除极值的影响,对所有候选参数进行 95%置信区间的标准化处理[13].本研究采用 Barbour 的方法,考察参照点和试验点在25%~ 75%百分位数范围内箱体之间的重叠情况,以检 验生物指数在参照点和试验点之间差异的显著性 (见图2)[16].

选择判别能力较强的候选生物参数,即参照点 和试验点两箱体之间无重叠或箱体重叠但两箱体的 中位线均在对方箱体之外的参数「优势种占百分比 (M1)、总分类数(M2)、香农-维纳指数(M3)、辛 普森指数(M4)、Margalef 指数(M5)、BI 指数 (M6)、BPI 指数(M7)、腹足纲数量(M8)和腹足纲 比例(M9)]用于进一步分析.

(2)相关性分析

相关性分析的目的是剔除冗余因子,使各参数 反映的信息具有独立性. 对以上9个因子的 Pearson 分析结果如表 2 所示.

表 2 候选生物 Perason 相关分析结果表

Table 2	Person correlation	matrix of the	candidate metrics

	M1	M2	M3	M4	M5	M6	M7	M8	M9
M1	1. 000								
M2	0. 779 * * *	1.000							
M3	0. 943 * * *	0.918 * * *	1.000						
M4	0. 979 * * *	0.814 * * *	0. 970 * * *	1.000					
M5	0. 795 * * *	0. 989 * * *	0. 929 * * *	0. 834 * * *	1.000				
M6	0. 134	0. 124	0. 136	0. 127	0. 157	1.000			
M7	0. 271	0. 307 *	0. 331 *	0. 302 *	0. 316 *	-0.678 * * *	1.000		
M8	0. 381 *	0. 627 * * *	0.490 * * *	0. 359 *	0. 621 * * *	0. 244	0.310 *	1.000	
M9	0. 377 *	0. 538 * * *	0. 453 * *	0. 352 *	0. 551 * * *	0. 247	0. 338 *	0. 721 * * *	1.000

当r>0.7时,两种因素为高度相关,保留其中 一个即可代表相关参数间所包含的大部份信息. 经 过相关性分析,发现香农-维纳指数(M3)、BI 指数 (M6)、BPI 指数(M7)和腹足纲数量(M8)可以表述 9 种候选参数所包含的主要信息. 因此最终选择这 4 个生物参数作为 B-IBI 的指标.

(3)参照点分布及分值计分标准

累加所有选定参数的赋分值,得出所有样点 B-IBI 的得分. 以参考点位 B-IBI 分值分布的 25%分位数作为健康标准,将低于25%分为点的 分值四等分,将健康水平分为健康、亚健康、一 般、较差、差5个等级的划分标准(见表3)[13]. 值得注意的是,由于太湖缺乏无人类干扰的清洁 点,也没有足够的历史数据值得借鉴,本研究中 选用水生生物丰度、多样性和结构组成较好的点 作为参照点,并以参照点的参数为标准定义了相 对的健康等级,因此本研究中所定义的"健康"是 相对而非绝对的.

表 3 B-IBI 评价分级标准

Table 3 Standard for the scores of the B-IBI assessment

B-IBI 值	>2. 29	1.74 ~ 2.29	1. 18 ~ 1. 74	0.56 ~ 1.18	0 ~ 0. 56
健康等级	健康	亚健康	一般	较差	差

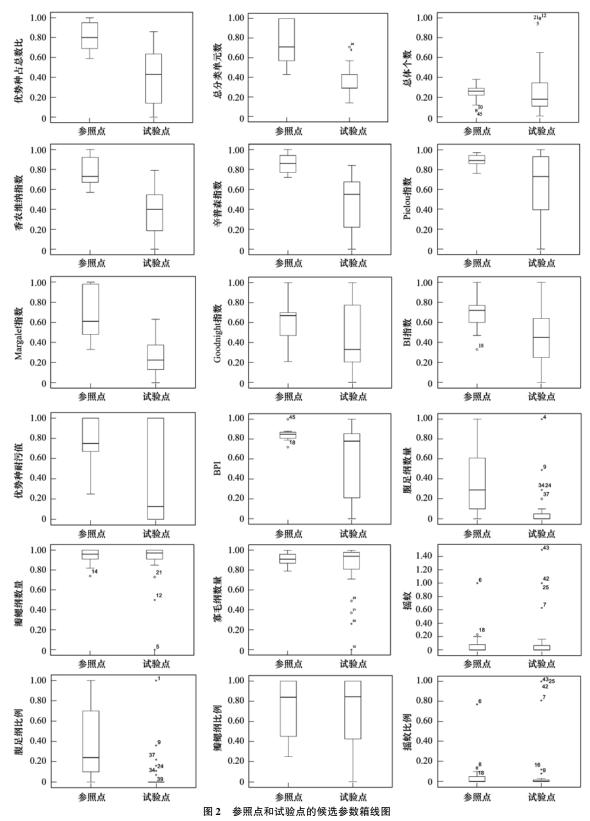


Fig. 2 Box-plots of the candidate metrics in reference sites and experimental sites

1.3 内梅罗指数法水质评价

内梅罗污染指数同时考虑了共存的多种污染参数和最主要的污染物对水质的影响,计算方法简单,是目前应用最为广泛的水质评价方法之一[11].其

计算方法如公式(1)所示.

$$P_{li} = \sqrt{\frac{\left[\left(c_i/L_{ij}\right)_{\text{mean}}\right]^2 + \left[\left(c_i/L_{ij}\right)_{\text{max}}\right]^2}{2}} \quad (1)$$

式中, P_{li} 表示内梅罗指数, c_i 表示实测水质参数的浓

度, L; 表示水质参数允许的最高浓度值.

受监测数据的限制,本研究仅选取 TN、TP、 NH_4^+ -N、DO、高锰酸盐指数和 BOD₅ 这 6 个参数评价水质污染状况. L_{ij} 为地表水 III 类水的水质参数指标.

1.4 数据分析

本研究应用 SPSS 18 软件实现参数之间的相关性分析.

2 结果与分析

2.1 太湖水生生物评价结果

2008~2012 年太湖共发现大型底栖动物 23 种,其中每年发现大型底栖动物种类分别为13、13、8、9、9 种. 东太湖(渔洋山和金墅港)的生物种类数明显高于其它点位. 5 a 间在东太湖 2 个点位发现的底栖动物种类为18 种,在其它湖区7 个点位仅为9 种.

太湖优势种为河蚬和霍甫水丝蚓. 但河蚬为优

势种的点位也逐年减少(由 2008 年的 4 个点位降低到 2012 年的 0 个点位). 霍甫水丝蚓在全湖各点的优势地位日益明显:到 2012 年以霍甫水丝蚓为优势种的点位已达到 5 个,主要集中在太湖西北部. 大浦口在 2009~2012 年的优势种都是霍甫水丝蚓,该点位年平均生物总数和霍甫水丝蚓数量(887 ind·m⁻²和451 ind·m⁻²)明显高于其它点位. 生物耐污性 BI 指数太湖所有样点(包括参照点和试验点)的都达到了 8 以上,太湖湖体内的大型底栖动物以耐污种为主.

底栖动物完整性评价结果显示,太湖大部分区域处于亚健康状态(表4). 太湖 2011 年和 2012 年水生生物健康状况较之前 3 年略有下降. 东太湖(渔洋山和金墅港)5 a 间水生生物基本都处于健康状态,其底栖动物完整性指数最高的点位于太湖西北区域(大浦口、沙诸、小湾里、五里湖心). 五里湖心的年均底栖动物完整性指数最低,5 a 间水生生物平均健康状况较差.

表 4 太湖采样点位的 B-IBI 指数值和生态健康状况1)

	Ta	ble 4 B-IBI value ar	nd health status of the	sample sites in Taihi	ı Lake	
采样点	2008年	2009年	2010年	2011年	2012年	多年平均
漫山	1.76	2. 25	2. 78	0. 14	2. 06	1.80
СЕЩ	亚健康	亚健康*	健康*	差	亚健康	亚健康
十四号灯标	1.99	2. 28	2. 60	1. 44	1. 79	2. 02
1 四 5 科 你	亚健康	亚健康*	健康*	一般	亚健康	亚健康
大浦口	2. 15	2. 00	1. 89	1. 14	1.81	1.80
Дtm I	亚健康	亚健康	亚健康	较差	亚健康	亚健康
新塘港	3.00	2. 29	2. 47	1. 85	1. 91	2. 30
对 佐	健康	亚健康*	健康*	亚健康	亚健康	亚健康
沙渚	2.00	2. 46	0. 69	1.78	0. 95	1. 58
V fil	亚健康	健康*	较差	亚健康	较差	一般
小湾里	1.83	1. 90	1. 92	2.00	0.82	1. 69
刀将至	亚健康*	亚健康	亚健康	亚健康	较差	一般
五里湖心	1.04	0. 99	0. 25	1.73	0.36	0. 87
五至砌心.	较差	较差	差	一般	差	较差
渔洋山	3. 28	3. 45	3.00	3. 17	2.70	3. 12
色行山	健康*	健康*	健康*	健康*	健康*	健康
金墅港	2. 42	2. 18	3.48	3. 07	2. 98	2. 83
並至他	健康	亚健康*	健康*	健康*	健康*	健康
平均	2. 16	2. 20	2. 12	1.81	1.71	_
. •	亚健康	亚健康	亚健康	亚健康	一般	_

农· 人的不什点位的 D-IDI 旧数值相主心健康状况

1) *表示参照点,下同

2.2 太湖水质内梅罗指数评价

2008~2012年太湖的水质在Ⅲ~劣V类,主要的污染物是总氮,全湖大部分样品的总氮含量超过了国家Ⅲ类水标准.部分点位的总磷和高锰酸盐指

数也超出了Ⅲ类水质标准.根据内梅罗指数法,计算太湖不同点位和时间的水质状况,结果如表 5 所示.太湖水质变化随年度没有明显的变化趋势,2008~2012年影响太湖内梅罗指数的最重要的水

表 5	太湖采样点位的内梅罗指数值

学

Table 5	Nemerow	value o	of the	sample	sites	in	Taihu	Lake

采样点	2008年	2009 年	2010年	2011年	2012 年	多年平均
漫山	2. 47	1. 91 *	2. 88 *	1.55	1. 45	2. 05
十四号灯标	1.85	2. 28 *	2.41 *	1.86	0. 95	1.87
大浦口	5. 12	5. 72	4. 67	4. 25	5. 96	5. 14
新塘港	1. 17	3. 00 *	2. 38 *	1. 45	3. 97	2. 39
沙渚	3.09	2. 38 *	3. 10	1.88	2. 54	2.60
小湾里	3. 25 *	2. 98	2.60	2. 03	1. 85	2. 54
五里湖心	1.31	1. 12	1.01	0.70	0.60	0. 95
渔洋山	1. 43 *	1. 68 *	3. 21 *	1. 17 *	0. 80 *	1.66
金墅港	1.95	0. 99 *	1.64 *	1. 60 *	2. 68 *	1.77
平均	2. 40	2. 45	2. 66	1. 83	2. 31	_

质参数是总氮. 五里湖心和东太湖点位水质较好, 太湖西北部地区水质较差,水质最差的样点是大 浦口.

3 讨论

3.1 太湖水生生物评价和水质评价时空相似性分析 总体上说,太湖水质评价和水生生物评价结果 表现出相似趋势,说明水质和水生生物之间存在一 定的相关性. 东太湖水生生物健康水平处于健康和 亚健康状态,水生生物种类较多,并检出沙蚕、环棱 螺和钩虾等耐污性较差的物种,这与东太湖水质相 对较好(长期处于Ⅲ~Ⅳ级)有关. 而东太湖污染物 和营养盐较低与该地区完整的生态系统也不无关 系. 东太湖水草繁盛,生态系统相对复杂,有利于区 域的营养盐的固定和循环,有效降低了水体中有机 物和营养盐含量,抑制了蓝藻水华暴发. 相反,大浦 口的水质等级和水生生物健康状况都较差. 该采样 点位于河口地区,入湖河流带来的大量黏质底泥、 有机质和营养盐导致湖区有机污染物和多种无机营 养盐严重超标. 水体中过量的有机物和营养盐造成 该区域藻类大量繁殖,隔断了水体中光和氧气交换, 且有机污染物和蓝藻分解也会消耗大量溶解氧,这 可能是大浦口地区生物种类减少,而耐缺氧生物霍 甫水丝蚓大量滋生的原因.

从时间上看,根据 1960~1961 年的调查^[3],太 湖全湖水质优于地表水Ⅲ类水的标准,而水生底栖 动物种类超过了 40 种[3]. 而本研究中,2008~2012 年间,太湖平均水质为V类和劣V类,而底栖动物种 类也仅有23种. 太湖水质等级和水生生物丰富度 在 50 a 间都呈现出了明显的下降趋势,这说明太湖 水生态健康状况与水质之间在长时间范围内表现出 一致性.

3.2 太湖水生生物评价和水质评价时空差异分析

内梅罗指数和生物完整性指数之间却缺乏相关 性(r=0.023, P=0.885),水质评价结果与水生生 物评价结果之间也存在一定的差异. 空间上, 五里 湖心点位虽然水质等级与东太湖相当,但水生生物 健康状况明显差于太湖其它点位. 时间上,太湖水 质在2008~2012年间没有明显的变化,但水生生物 健康状况却略下降.

水质理化和水生生物评价的目的都是衡量水环 境健康程度,分析水环境安全问题,有目的性地管理 并保护水资源,因而两者之间是相辅相成的. 然而, 由于两种评价方法的评价角度和内容的差别,评价 结果间常存在分歧. 当两者出现分歧时,不能简单 地规定以何种监测方法结果为准,而应该分析分歧 所产生的深层次原因,探讨相应的管理手段. 如本 研究中五里湖水质和水生生物监测结果的差异主要 源于人类清淤和闸控等干扰. 五里湖虽然水质较 好,但水环境功能性和现有生态系统抗干扰能力较 差,需要进一步地恢复水体生态功能. 而在 Nedeau 等[17]研究中排污通过增加浅滩生境增加了下游的 石蛾、蜉蝣等水生昆虫的丰富度,但排污后流域水 质有所降低,因此不能因水体生物丰富度增加就认 定排污有利于生态健康,仍然需要对污水进行净化 处理. 只有掌握了影响水质和水生物健康的深层次 原因才能准确有效地进行环境管理和污染治理.

本研究中水质评价和生物评价的差异可能主要 源于以下3点.

第一,水质评价和水生生物评价所涉及的时间 尺度有所区别. 水质参数所表征的是采样瞬时样点 的水环境质量,受诸如风力、温度等环境因素影响 较大. 而水生生物评价结果则表征的是湖区长时间 的水环境综合质量. 如本研究中底栖动物的种类和 数量可以反映一个世代,甚至多个世代期间水质变 化的积累状况,相对稳定. 此外,由于太湖中有机物

和营养盐浓度对底栖动物没有明显的毒性效应,而 底栖动物在生态系统中等级较高,因此其生物健康 状况对水质变化反映具有一定的滞后性.

第二,水质评价主要关注水体中污染物和营养盐浓度是否超出了环境阈值,而水生生物评价所关注的是水环境对水生生物生长的承载功能,不仅要考虑水质因素,还需要考虑生境(底质、流速、温度、泥沙含量、大型水生植物覆盖等[18~20])因素.如五里湖虽然目前水质高于地表水皿级水平,但由于:①该地区水质曾一度污染严重,底栖动物大量死亡[21];②2003年进行生态清淤,底栖生态系统遭到严重破坏[22];③五里湖和梅梁湖之间设置了水闸隔断了湖区间的物质交换和生物迁移,因而水生生物健康状况较差[23].仅有水质差异成为影响底栖动物生存最重要的因素时,底栖动物的种类和数量(本研究中体现为生物完整性指数的变化)才能表征水质变化.

第三,底栖动物完整性指数和内梅罗指数均属于综合性评价方法,其结果同时反映不同权重的多个参数.如本研究中底栖动物完整性指数涵盖了物种丰富度、物种个体数量比例、物种耐污性和物种多样性4类参数,而内梅罗指数包含了6个参数.这些参数之间相互影响,影响方向和强度有所差异.因此很难找出内梅罗指数和生物完整性指数之间的相关性.

此外,污染物浓度低于底栖动物的检出限、污染物高于底栖动物的耐受能力以及污染物之间的相互作用等也可能影响水质评价和水生生物评价的一致性.

3.3 生物指标与水质指标的影响因素相关性分析水质评价和水生生物评价的最终目的都是更好地管理太湖水资源.分析影响水质和水生生物健康的主要因素,寻求改善水环境的可控手段对太湖水质管理和功能恢复具有非常重要的意义.五里湖心的水质已可以满足多种底栖动物需求,因而模拟历史生态系统组成,通过水生生物种植、底栖动物和鱼苗放养恢复多层次的生态系统应该是该区域水生态功能保护和恢复的重点.

太湖其他区域水质和水生生物评价存在相似的 趋势,说明水质控制有利于保障区域水生态功能. 生物完整性指数评价指标中丰富度、耐污性、多样 性和结构组成这4类环境参数与水质参数之间关系 更紧密. ①底栖动物总数量可反映底栖动物的丰富 度,其与高锰酸盐指数、生化需氧量、总氮和氨氮 浓度都呈正相关,说明水体中有机物和营养盐是底栖动物生长提供了必要的生长条件.②耐污性指数BI与叶绿素 a 呈正相关,多样性指数(香农维纳指数、辛普森指数和 Margalef 指数)与水体的叶绿素 a 呈负相关. 叶绿素 a 可以表征湖泊中藻含量,是富营养化的重要参数^[24,25]. 这说明太湖富营养化增加了湖泊的污染,降低了水生生态系统稳定性,是影响水生生物健康的主要因素之一. ③寡毛纲分布广泛,是常见的耐污种^[26,27]. 本研究中寡毛类生物在水质和水生生物健康较差的西北湖区数量较大,其数量与高锰酸盐指数、生化需氧量、总氮、氨氮、总磷浓度及内梅罗指数都呈显著正相关. 因而可以考虑利用寡毛纲作为太湖水污染和富营养化的指示种.

尽管有机物和营养盐为水生生物提供了生长必须的营养物质,但过量的氮磷造成的太湖藻类大量繁殖,降低了生态系统稳定性,最终造成了生态系统功能退化.因而,控制太湖流域有机污染物和氮磷浓度是实现水生生态系统平衡和健康的可行而有力手段.其中,大浦口地区水质和水生生物健康状态较差说明人湖河流是太湖重要的污染源.因而,严控人湖河流的水质等级和营养输入是维护太湖水生态功能的重中之重.

4 结论

- (1)太湖全湖水质受到污染,水生生物健康基本处于亚健康状态.
- (2)水质和水生生物评价结果总体上呈现相似趋势. 东太湖水质和水生生物健康状态明显好于西太湖,太湖的水质和水生生物健康从 20 世纪 60 年代开始出现了明显的恶化. 水质和水生生物评价结果在短时间和个别点位的差异与两种评价的时间尺度及影响因素有关.
- (3)控制太湖流域,特别是入湖河流的有机物和营养盐的排放对改善太湖水质、保护太湖水生生物健康和恢复太湖水生态功能具有积极的意义.

致谢: 苏州市环境监测站、无锡市环境监测站 和常州市环境监测站在样品采集及分类鉴定中做了 大量工作, 在此致以诚挚的感谢.

参考文献:

- [1] 濮培民,王国祥,李正魁,等. 健康水生态系统的退化及其修复——理论、技术及应用[J]. 湖泊科学,2001,13(3):193-203.
- [2] 陆铭锋,徐彬,杨旭昌.太湖水质评价计算方法及近年来水质变化分析[J].水资源保护,2008,24(5):30-33.

- [3] 中国科学院南京地理研究所.太湖综合调查初步报告[M]. 北京:科学出版社,1965.
- [4] 马陶武,黄清辉,王海,等.太湖水质评价中底栖动物综合 生物指数的筛选及生物基准的确立[J].生态学报,2008,28(3):1192-1200.
- [5] 杨桂军,秦伯强,高光,等. 太湖不同湖区轮虫群落结构季节变化的比较研究[J]. 环境科学,2008,29(10):2963-2969.
- [6] Duan H T, Ma R H, Xu X F, et al. Two-decade reconstruction of algal blooms in China's Lake Taihu [J]. Environmental Science and Technology, 2009, 43(10): 3522-3528.
- [7] Karr J R. Assessment of biotic integrity using fish communities[J]. Fisheries, 1981, 6(6): 21-27.
- [8] 巴伯著. 郑丙辉, 刘录三, 李黎, 译. 溪流及浅河快速生物 评价方案——着生藻类、大型底栖动物及鱼类[M]. (第二版) 北京: 中国环境出版社, 2010.100-133.
- [9] Beck M W, Hatch L K. A review of research on the development of lake indices of biotic integrity [J]. Environmental Reviews, 2009, 17: 21-44.
- [10] Brucet S, Poikane S, Lyche-Solheim A, et al. Biological assessment of European lakes: ecological rationale and human impacts[J]. Freshwater Biology, 2013, 58(6): 1106-1115.
- [11] 张远,徐成斌,马溪平,等. 辽河流域河流底栖动物完整性评价指标与标准[J]. 环境科学学报,2007,27(6):919-927.
- [12] 耿世伟, 渠晓东, 张远, 等. 大型底栖动物生物评价指数比较与应用[J]. 环境科学, 2012, **33**(7); 2281-2287.
- [13] 高欣, 牛翠娟, 裴雪姣. 太湖流域大型底栖动物生物完整性研究[J]. 北京师范大学学报(自然科学版), 2012, **48**(4): 392-398.
- [14] 国家环境保护总局. 水和废水监测分析方法[M]. (第四版) (增补版). 北京: 中国环境科学出版社, 2006. 200-284.
- [15] 张跃平. 江苏大型底栖无脊椎动物耐污值、BI 指数及水质生物评价研究[D]. 南京: 南京农业大学, 2006.
- [16] 曹艳霞, 张杰, 蔡德所, 等. 应用底栖无脊椎动物完整性指数评价漓江水系健康状况[J]. 水资源保护, 2010, **26**(2):

- 13-17, 23.
- [17] Nedeau E J, Merritt R W, Kaufman M G. The effect of an industrial effluent on an urban stream benthic community: water quality vs. habitat quality [J]. Environmental Pollution, 2003, 123(1): 1-13.
- [18] Ligeiro R, Hughes R M, Kaufmann P R, et al. Defining quantitative stream disturbance gradients and the additive role of habitat variation to explain macroinvertebrate taxa richness [J]. Ecological Indicators, 2013, 25: 45-57.
- [19] McGoff E, Aroviita J, Pilotto F, et al. Assessing the relationship between the lake habitat survey and littoral macroinvertebrate communities in European lakes[J]. Ecological Indicators, 2013, 25: 205-214.
- [20] Rempel L L, Richardson J S, Healey M C. Macroinvertebrate community structure along gradients of hydraulic and sedimentary conditions in a large gravel-bed river [J]. Freshwater Biology, 2000, 45(1): 57-73.
- [21] 李文朝. 五里湖富营养化过程中水生生物及生态环境的演变 [J]. 湖泊科学, 1996, **8**(S1): 37-45.
- [22] 徐卫东,毛新伟,吴东浩,等.太湖五里湖水生态修复效果分析评估[J].水利发展研究,2012,(8):60-63.
- [23] Wang H Z, Wang H J, Liang X M, et al. Empirical modelling of submersed macrophytes in Yangtze lakes [J]. Ecological Modelling, 2005, 188(2-4): 483-491.
- [24] Lorenzen C. Determination of chlorophyll and pheopigments: Spectrophotometric equations[J]. Limnology and Oceanography, 1967, 12(2): 343-346.
- [25] 邓建才,陈桥,翟水晶,等. 太湖水体中氮、磷空间分布特征及环境效应[J]. 环境科学,2008,29(12);3382-3386.
- [26] 梁彦龄,王洪涛. 中国水栖寡毛类的研究: Ⅳ. 仙女虫科和 颤蚓科的新纪录和稀有种[J]. 水生生物学报,1998,22 (1):54-61.
- [27] 王宗兴. 中山水栖寡毛类区系调查及底栖动物对湖泊环境定量指示初探[D]. 武汉: 中国科学院水生生物研究所, 2007.

HUANJING KEXUE

Environmental Science (monthly)

Vol. 35 No. 1 Jan. 15, 2014

CONTENTS

As Assenced Partins of Water-Schale less in Play, and Changhai Mentation as a Generative Right and Exposure Design (IRS) James, W. W. West, W. W. Tamwer, et al. [1]. Second Variation of Water-Schale less in Play, and Changhai Mentation and Design of Water Schale less in Play, and Changhai Mentation [1]. A proceedings of the State of Manager of Changing (IRS) and In Second Variation [2]. A proceeding of Water Schale less in Play, and Changing (IRS) and In Second Variation [2]. A proceeding of Water Schale less in Play, and and Changing (IRS) and In Second Variation [2]. A proceeding of Water Schale less in Play, and and a proceeding of Water Schale less in Play, and a proceeding of Water In Variation of PURIO's from Markon Proceeding Comment Klim with Polescolary in the Schale less in Play, Nava (IRS), Wite-ling, ILS (IRS), Nava (IRS)	CONTENTS	
Samed Water-Saleh Lee in PN, 4 al Changlad Mentain ZIAO Yaram, WANG Yara, WA	An Assessment of PM _{2.5} Related Health Risks and Impaired Values of Beijing Residents in a Consecutive High-Level Exposure	During Heavy Haze Days
Variation of Almospheric Pariade Number Concentrations in Uniphos and Its Impact on visibility Concentration of ARDVIN in the Attemphore of College (17) and 18 Secondary Variation Characterization of ARDVIN in the Managebore of College (17) and 18 Secondary Variation Managebore Existion of APDVIN from Newton Processing General Secondary Variation ARDVIN in the ARDVIN in Secondary Variation Mealings (18) and the Secondary Variation of APDVIN in Managebore Existion of APDVIN in Managebore Existion of APDVIN in Managebore (18) and the Secondary Variation of		······ XIE Yuan-bo, CHEN Juan, LI Wei (1)
Concentration of PAIDPS in the Aumophor of Cheeping (five and In Secural Variation — 1211, PAID Kan-ling, GO 500) Annumbration of AUDPS from Security (with March 1914) Annumbration of AUDPS from March 1914 Protection of Patricks and Patricks (1914) Annumbration of AUDPS from March 1914 Protection for Patricks (1914) Annumbration of AUDPS from March 1914 Protection of Patricks and Patricks (1914) Annumbration of AUDPS from March 1914 Protection of Patricks and Patricks (1914) Annumbration of Audps from March 1914 Protection of Patricks and Patricks (1914) Annumbration of Audps from March 1914 Protection of Patricks (1914) Annumbration of Audps from March 1914 Protection of Patricks (1914) Annumbration of Audps from March 1914 Protection of March 1914		
Amespheze Ensision of PUDD-15 non Scoulary Alminium Menlangs Industry in the Sauthorst Aven, Clima (1802). Amespheze Ensision of PUDD-15 non Mode to Processing General Less with Perlanding in the Sauthorst Aven, Clima (1802). Published State and Characteristics of PUDD-15 in Industry and (1802). Published State and Characteristics of PUDD-15 in Industry and the England State and Characteristics of Published State and Published State in Industry and Control of Published State and Published State in Published State and Published State and Characteristics of Published Published Published Published Published Published Pub		
Amongheire Finishion of PURDET, from Modern Der Processing Control Kiln with Percentage in the Sauthuros Area, Giana TARAN Kinolog, III Y., JIAN Clause, et al. (§ 5)		
Pollution State and Characteristics of Pillick in Indoor. An of Hangdane Experience of Proceedings of Pillick in Indoor. An of Hangdane Experience Processing Place and Susseal Variations of Elevents in Northean of Schaum, Control China TON Naso-ning, 2010. How-year, 701. Cheerings, et al. (5) Minopheric Poposition Places and Susseal Variations of Elevents in Northean of Schaum, Control China TON Naso-ning, 2010. How-year, 701. Cheerings, et al. (5) We Inspection of Managheric Nations of the Indoor Waterhood in the Upper Hunjiang River WAM Jin-jee, 2414-NE Secong, WI Cham, et al. (7) We Inspection of Annual Processing Places and Company of the Common Composition of Academics Vision and Its States and Composition of Places (Hangdane) and Olg. Scheleus in Arabic Sail Experience of Hangdane Composition of Disorded Recent in the Video Sca and East China Sca. W. H. Wang, M. Wang, S. Will Yung, et al. (9) Conclusional Distribution of Disorded Recent in the Video Sca and East China Sca. W. W. Nicoland, S. Will Yung, et al. (10) Temporal-special Distribution of Disorded Recent in the Video Sca and East China Sca. W. W. Nicoland, S. Will Yung, et al. (10) Temporal-special Distribution and Disorder Scane in the Cycle Recent Scane and Composition of Disorder Composition of Disorder Recent in the Video Sca and East China Sca. MA Yingsaya, SHI Yun, (NI Yunwan, et al. (10) Temporal-special Distribution and Disorder Scane in the Cycle Recent Unpaired Composition of Tomogenic Composition of Nicoland Scane and Composition of Composition of Disorder Composition of Composition of Composition of Disorder Composition of Disorde		
See Destruition of Particle and Polycyclic Anomaic Hydrocarbos in Particle Emission from Smalated Emission Sources TON No. Sealing, 2010 Hospan, vol. 146, 167, 167, 167, 167, 167, 167, 167, 16		
Amougher's Poposition Phones and Secondal Variations of Elements in Northeast of Schums, Lentul China TUNK Xusoning, 2010, Han-yan, VOL Chercheng, et al. 55 Transl in Acid Disposition of Techniquing Conging During 2011/2019 YLD Position of Manage Posit		
Frend in Ariol Deposition at Tiechungira, Congage Baring 2001–2010 — "YU Dessings, MA Xian-vino, TAN Kinegungan, et al. (6) Chemical Compositions of n-Mikanois. Acada in Whata Stars and In Simale "URC Age, and the Congage Congression of the Congage C		
Wet Deposition of Austrage facility and Management for Eupstell Watersheet in the Upper Hugings River		
Central Compositions of a-Mannie Archis in Ward Store and Its Smake		
Magnete Properties of Indoor Destalla at Different Heights in Lardon Western Flance from Confete Consulted Forces Floric Cardon and CO, Release in Anabe Scil — M. Ming, W. M. Chingo, W. M. Stong, W. M. Chingo, W. M. M. Ming, W. M. Chingo, W. M. M. Marcoll, N. W. Landon, S. W. Land		
Mercuny Phones from Confice-Roundlerd Footsoche Heid in Central Subtropical Foots Zone Max Max, WANG Ding-yong, SHEN Yaun-yuan, ed. (83) Reported five Stams Birchart on Organic Carbon and CD, Release in Anable Scil Coecelemical Distribution of Dissolved Bissenth in the Yellow Sea and East Clinia Sca Temporal-spital Distribution and Pollution Assessment of Heavy Metals in the Upper Reaches of Hambe River (Qinguan Section), Northest Clinia Max Ving-quan, SHI Yao, Qin Yuawwan, ed. (108) Determination of Estopoguic Componels in Water of Jislong River Using Polar Organic Chemical Integrative Sumpler Max Ving-quan, SHI Yao, Qin Yuawwan, ed. (108) Determination of Estopoguic Componels in Water of Jislong River Using Polar Organic Chemical Integrative Sumpler Max Ving-quan, SHI Yao, Qin Yuawwan, ed. (108) Determination of Estopoguic Componels in Water of Jislong River Using Polar Organic Chemical Integrative Sumpler Max Ving-quan, SHI Yao, Qin Yuawwan, ed. (108) May Varintion Chametricis and Environmental Sumfacial Cardion in Kard Gomenhart var Cliffs (Max Such in Yako Niko Phane), LI Yoogay, ed. (117) Major Integrative Standard Statistics of Standard Standard Cardion Integrative Sumpler Taxo Cardion Standard Standard Standard Standard Standard Cardion Integrative Standard		
Impacts of Rice Stane Richart and Organic Carlou and O.J., Release in Analysis Sal — W. Winso-dan, 2008; Jines-ming, W. Dien, et al. (190). Temporal-spittal Bistillution of Bosolved Bismuth in the Yellow Sea and East China Sea — W. Winso-dan, 2008; Jines-ming, W. Dien, et al. (100). Temporal-spittal Bistillution and Pullifon Assessment of Heavy, Metals in the Upper Reaches of Hunbe Rivor (Qingxum Section), Northeast China — M. A. Yiney-m., 2014; M. Vines-m., et al. (110). Determination of Estrogenic Companies in Water of Jinkong Rivor Using Polar Organic Chemical Integrative Sampler — ZHANG Liepong, WAN (Norboug, 11 Norsyu, v. al. (117). Variation Characteristics and Environmental Significant of Trace Elements Under Rainfull Cardision in Kara Genorabater — CHEN Xue-Sin, YANG Ping-long, LAN Jine-dong, et al. (113). Porms and Spatial Distribution Characteristics of Nitrogen in Ziya River Raini Hilly Red Soil Earth Region of Central Saltropies — SUNG Li-Ling, WANG Vi, VI, Unleadin, et al. (151). Impact of River Agriculture on Nitrogen and Phosphorus in Kinete Schiences of the Viele Soc and the East China Sea — SUNG Li-Ling, WANG VI, VI, Unleadin, et al. (151). Characteristics and Department of Ropo-brown in Kinete Schiences of the Viele Soc and the East China Sea — SUNG Li-Ling, WANG VI, VI, Unleadin, et al. (152). Characteristics and Department of Ropo-Brown in Schience Schiences of River Schiences of the Viele Soc and the East China Sea — SUNG Wang-Jong, JUL Scene, JUL Schoen, et al. (163). Regression and Tumodermation of the North-EUTA Extracts for Solution Science Schiences (WIE) of the Tumodermation of Ropo-Porn is Superbook Solid Under South-tense Schiences Department Department Schiences — WU Xiao-Gin, JUL Scote, and (164). See Schiences in March Lie Schiences of River Schiences of the Horsy Metals Source Analysis of Organic Posphorus Removal by General Estatuation Sciences — All Ling, J. Elbo, Wang Schiences, and July Schiences and Department of Soluty Schiences and Department Schiences and Department Schi		
Geochemical Destribution of Desired Sistenth in the Vellow Sea and East Clinus Se. Temporal-spatial Distribution and Pollution Assessment of Heavy Metals in the Upper Reaches of Humbe River (Qingsum Section), Nontreast Clinus MA Ying-qua, SHI Yao, QiN Yan-wen, et al. (183) Determination of Estospenic Compounds in Water of Judings River Using Polar Organic Chemical Integrative Sample MA Ying-qua, SHI Yao, QiN Yan-wen, et al. (183) Major Incomenstry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water in the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water In the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water In the Xilin River Basin and the Possible Controls Take Chemistry of Surface Water In the Xilin River Basin Andrews Surface Analysis of Organic Possphorus in River Schiments Material Take Case Surface Possible Chemistry of Surface Possible Chemistry Surface Possphorus in River Schiments EllaNOW West-quing, SHAN Bas-quing, ZHANG Rose Integration and Timedermation of BAIP in Suspended Solids Under Short-term Sediment Designer Possphorus in River Sediments EllaNOW West-quing, SHAN Bas-quing, ZHANG Rose Integrate Revolution of Bail Pain Suspended Solids Under Short-term Sediment Designer Possphorus in River Sediments EllaNow West-quing, SHAN Bas-quing, ZHANG Rose Integrate Revolution and Timedermation of BAIP in Suspended Solids Under Short-term Sediment Designer Revolution and Timedermation of BAIP in S		
Temporal-spatial Distritation and Pollution Assessment of Heavy Metals in the Lipper Reaches of Humbe River (Jugopuan Section), Northeant China MA Ying, equa, SHI Yao, QHN Yan-owen, et al. (108) Determination of Entrogenic Compounds in Water of Jialong River Using Polar Organic Chemical Integrative Sampler ZHANG Use-Jon, YANO Ping-beng, JAM Jis-cheng, et al. (123) Major loo Comesty's Oxfunce Water in the Kilm River Riss and the Possible Controls TANO New-Jon, YANO Ping-beng, JAM Jis-cheng, et al. (123) Forms and Spatial Distribution Characteristics of Ninogen in Zya River Riss Talk Oxv., SHAN Bas-rijne, ZHANG Wev-rijnag, et al. (131) Forms and Spatial Distribution Characteristics of Ninogen in Zya River Riss Talk Oxv., SHAN Bas-rijne, ZHANG Wev-rijnag, et al. (143) Study on Distribution of Pinsphoras in Surface Soliments of the Yellow Sea and the East China Sea SONG Gas-Solong, JU St-new, ZHANG Goo-ling (157) Characteristics and Optimization of the North-EDIT Extracts for Solution 372-NMR Analysis of Organic Pinsphoras in River Soliments ZHANG Wev-rijnag, SHAN Bas-rijne, ZHANG Houg, et al. (163) Regeneration and Tinasformation of BAPP in Suspended Solids Under Stort-term Sediment Disturbance ZHANG Wev-rijnag, SHANG Bas-rijne, ZHANG Houg, et al. (163) Regeneration and Tinasformation of BAPP in Suspended Solids Under Stort-term Sediment Disturbance ZHANG Wev-rijnag, SHANG Bas-rijne, ZHANG Houg, et al. (163) Regeneration and Tinasformation of BAPP in Suspended Solids Under Stort-term Sediment Disturbance ZHANG Wev-rijnag, SHANG Bas-rijne, ZHANG Houg, et al. (163) Regeneration and Tinasformation of BAPP in Suspended Solids Under Stort-term Sediment Disturbance ZHANG Wev-rijnag, SHANG Bas-rijne, ZHANG Houg, et al. (163) Study on the Stages of Major Sediments in Diameli Lake SHANG Men-rijne, GU Xiao-bing, et al. (202) Study on the Stages of Major Sediments in Diameli Lake WANG Xian-Lip Lip Bay, Water Sediment Sediment Sediment Solids Solids Solids Solids Solids Solids Solids Solids Solids Sol		
MA Ying-quin. SHI Yao, QNY Yan-wen, et al. (108) Determination of Estrogenic Compounds in Water of Judong River Using Polar Organic Commical Integrative Sampler ZHANG Li-peng, WANG Yai-Don, et al. (117) Variation Characteristics and Environmental Significant of Tarce Elements Under Rainfall Condition in Kanet Gonzalvater CHEN Yau-Bin, YAMC Ping-berng, LAN Jucheng, et al. (123) Major Ino Chemistry of Surface Water in the Xliin River Bosin and the Possible Controls TANG Xi-wen, WU Lin-kii, Xi W. Li-yang, et al. (131) Impact of Rice Agriculture on Xivogen and Phosphoras Exports in Streams in Hilly Red Sul Earth Region of Central Subropies SONG Li-lang, WANG Yi, WU Lin-shair, et al. (150) Suby on Distribution and Optimization of the North-EDTA Extracts for Sultino 219-Possible State State Subra on Distribution and Optimization of the North-EDTA Extracts for Sultino 219-Possible State State Subra on Distribution and Optimization of the North-EDTA Extracts for Sultino 219-Possible State State Subra on Distribution and Optimization of the North-EDTA Extracts for Sultino 219-Possible State State Subra on Distribution and Optimization of the North-EDTA Extracts for Sultino 219-Possible State State Subra on Distribution and Optimization of the North-EDTA Extracts for Sultino 219-Possible State State Subra on Sultino 219-Possible State State Subra on Subra of Subra on Subra on Sultino 219-Possible State State Subra on Subra of Subra on Subra on Subra of Subra on Subra of Subra on Subra of Subra on Subra on Subra of Subra on Subra on Subra of Subra on Subra on Subra of Subra on	Geochemical Distribution of Dissolved Bismuth in the Yellow Sea and East China Sea	WU Xiao-dan, SONG Jin-ming, WU Bin, et al. (100)
Determination of Enterportic compounds in Water of Indong River Using Padar Organic Coemical Integrative Sampler ————————————————————————————————————	Temporal-spatial Distribution and Pollution Assessment of Heavy Metals in the Upper Reaches of Hunhe River (Qingyuan Section	on), Northeast China
Narieto Chemistry of Surface Water in the Xillin River Rasin and the Possible Controls TANG X-was May Surface Water in the Xillin River Rasin and the Possible Controls TANG X-was Willinskin, XUE Liyang, et al. (133) Homest of Rice Agriculture on Nitrogen and Phosphorus Exports in Streams in Hilly Red Sul Earth Region of Central Sultropies SONG Li-fang, WANG Yi, WU Jin-shui, et al. (135) Impact of Rice Agriculture on Nitrogen and Phosphorus Exports in Streams in Hilly Red Sul Earth Region of Central Sultropies SONG Gas-dong, JUL Sx-newi, 2HANG Goo-ling (157) Characterization and Optimization of the NaOH-EDTA Extracts for Solution 31 P-NMR Analysis of Organic Phosphorus in River Sediments WU Xiao-Fei, JU Depeng, WAMC Ming (171) Sediment Risk Assessment and Heavy Metal Scarce Analysis in Typical Country Water Level Fluctuated Zuee (WILF2) of the Three Googs. WU Xiao-Fei, JU Depeng, WAMC Ming (171) Sediment Risk Assessment and Peterstal Ecological Risk Assessment of Heavy Metals in Sediments from the Different Eastern Deciging Regions of Late. Tailur. MAO Zhi-gang, GU Xiao-Jong, LU Xiao-ming, et al. (185) Study on the Stages of Major Sediments in Darachi Lake MAO Zhi-gang, GU Xiao-Jong, LU Xiao-ming, et al. (186) Study on the Stages of Major Sediments in Darachi Lake MAO Zhi-gang, GU Xiao-Jong, LU Xiao-ming, et al. (202) Treatment of Shudge Lispace Produced in Deep Delephraticolop Synchronous-Matrix-Fluorescence Spectra WANC Chans, SMI Xiao-Geng, LU Waso-ming, et al. (202) Treatment of Shudge Lispace Produced in Deep Delephraticolop Synchronous-Matrix-Fluorescence Spectra WANC Xiao-Ji, WANC Shi-feng, WU Jan-Feng, et al. (202) Treatment of Shudge Lispace Produced in Deep Delephraticolop Synchronous-Matrix-Fluorescence Spectra WANC Xiao-Ji, WANC Shi-feng, WU Jan-Feng, et al. (202) Treatment of Shudge Lispace Produced in Deep Delephraticolop Synchronous-Matrix-Fluorescence Spectra WANC Xiao-Ji, WANC Shi-feng, WU Jan-Feng, et al. (202) Treatment of Shudge Lispace Produced in Deep Delephraticolop Synchronous-Matrix-Flu		MA Ying-qun, SHI Yao, QIN Yan-wen, et al. (108)
Forms and Spatial Distribution Characteristics of Nitrogen in Zya River Basin and the Possible Cantrals ZHAO Yu., SHAN Baso-qing, ZHANG Wen-qiang, et al. (131)	Determination of Estrogenic Compounds in Water of Jiulong River Using Polar Organic Chemical Integrative Sampler	······· ZHANG Li-peng, WANG Xin-hong, LI Yong-yu, et al. (117)
Forms and Spatial Distribution Characteristics of Nitrogen in Ziya River Resin — ZHAO Yu, SHAN Bao-qing, ZHANG Wen-qiang, et al. (143) Impact of Rice Agriculture on Nitrogen and Phosphoran Exports in Streams in Hilly Red Soil Earth Region of Central Subtropies — SONG Li-fang, WANG Ti, WU Jin-shai, et al. (150) Characterization and Optimization of the NoDH-EDTA Extracts for Solution 3 ¹ P-NMR Analysis of Organic Phosphorans in River Sediments — WU Xiao-fei, Li Dapeng, WANG Ming (157) Characterization and Optimization of the NoDH-EDTA Extracts for Solution 3 ¹ P-NMR Analysis of Organic Phosphorans in River Sediments — WU Xiao-fei, Li Dapeng, WANG Ming (171) Sediment Risk Assessment and Heavy Metal Source Analysis in Typical Country Water Level Fluctuated Zone (WLPZ) of the Turne Congs. — AO Liang, LEI Bo, WANG Ye-chum, et al. (179) Pollution Distribution and Potential Ecological Risk Assessment of Heavy Metals in Sediments from the Different Eastern Dredging Regions of a lake Tailu. — MAO Zhi-gang, GU Xiao-bang, LU Xiao-ming, et al. (186) Study on the Stages of Major Sediments in Danchi Lake — WANG Xiao-yao, ZiliO Feng, Yi Xiao, et al. (194) Oil Spill Healthfording Lisage Fraing Method Based on Concentration-Synchronous-Martir-Pluorescence Spectra. — WANG Xiao-yao, ZiliO Feng, Yi Xiao, et al. (202) Treatment of Sludge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process — WANG Xiao-lii, WANG Shi-feng, WU Jun-feng, et al. (202) Treatment of Sludge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process — WANG Xiao-lii, WANG Shi-feng, WU Jun-feng, et al. (202) Compositions and Residual Properties of Petroleum Hydrocarbon in Contaminated Sail of the Oilfields — SIN Hun-gave, in Clu Ping, PEAC Yorg-fene Liquor Study on Long-Term Salahily of Robogola Pixoge Pixogen Salahila Shipping Liquor Salahila Shipping Liquor Salahila Shipping Liquor Liquor in Vivo Kinds of Clay Minester Salahila Shipping Liquor Salahila Shipping Liquor Salahila Shipping Liquor Salahila Shipping Liquor Salahila Shipping L		
Impact of Rice Agriculture on Nitrogen and Phosphorus Exports in Stemas in Hilly Red Sul Larth Region of Central Subtropies		
Sudy on Distribution of Phosphorus in Surface Sediments of the Yellow Sea and the East China Sea ZHANG Goo-long, LIU Su-meir, ZHANG Goo-ling (157) Characterization and Optimization of the NOH-EDTA Extracts for Solution ¹¹ P-NMR Analysis of Organic Phosphorus in River Sediments ZHANG Wen-qiang, SHAN Bao-qiag, ZHANG Hong, et al. (163) Regeneration and Transformation of BAPP in Suspended Solids Under Short-term Sediment Disturbance WU Xiao-fei, LI De-peng, WANG Ming (171) Pollution Distribution and Potential Ecological Risk Assessment of Heavy Medals in Sediments from the Different Eastern Dredging Regions of Lake Tailu MAO Zhi-gang, GU Xiao-bong, LU Xiao-bing, LU	Forms and Spatial Distribution Characteristics of Nitrogen in Ziya River Basin	······ ZHAO Yu, SHAN Bao-qing, ZHANG Wen-qiang, et al. (143)
Characterization and Optimization of the NuOH-EDTA Extracts for Solution 31 P-NMR Analysis of Organic Phosphorus in River Sediments		
ZHANG Wen-qiang, SHAN Boo-qing, ZHANG Hong, et al. (163) Seciment Risk Assessment and Heavy Metal Source Analysis in Typical Country Water Level Fluctuated Zane (WLFZ) of the Three Gorges —— AD Liang, LEI Bo, WANG Ver-chun, et al. (179) Publistion Distribution and Potential Ecological Risk Assessment and Heavy Metal Source Analysis in Typical Country Water Level Fluctuated Zane (WLFZ) of the Three Gorges —— AD Liang, LEI Bo, WANG Ver-chun, et al. (189) Publistion Distribution and Potential Ecological Risk Assessment of Heavy Metals in Sediments from the Different Eastern Deedging Regions of Lake Tailu —— MAO Zhi-gang, GU Xiao-bong, LU Xiao-ming, et al. (186) Study on the Stages of Major Sediments in Dianchi Lake ————————————————————————————————————		
Regeneration and Transformation of BAPP in Suspended Solids Under Stort-term Sediment Disturbance	Characterization and Optimization of the NaOH-EDTA Extracts for Solution 31P-NMR Analysis of Organic Phosphorus in River Solution 31P-NMR Analysis of Organic Phospho	sediments
Sediment Risk Assessment and Heavy Metal Source Analysis in Typical Country Water Level Fluctuated Zone (WIFZ) of the Three Gorges — AO Liang, IEI Bo, WANG Ye-chun, et al. (179) Pollution particular Distribution and Potential Ecological Risk Assessment of Heavy Metals in Sediments from the Different Eastern Deedging Regions of Lake Tailus — MAO Zhi-gang, GI Xiao-hong, LU Xiao-ming, et al. (186) Study on the Stages of Major Sediments in Dianchi Lake — WANG Xin-yu, ZHOU Feng, Yi Xuan, et al. (194) Oil Spaill Identification Using Partial Surface Fitting Method Based on Concentration-Synchronous-Matrix-Fluorescence Spectra — WANG Chun-yan, SHI Xiao-feng, LI Went-dong, et al. (202) Treatment of Studge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process — WANG Xin-yin, Zhi Xiao-feng, LI Went-dong, et al. (208) Characteristics of Nitrification and Denitrification for Simultaneous Nitrogen and Phosphorous Renoval by Granular Studge — IIU Xiao-ying, LIN Hui, MA Zhao-rui, et al. (214) Study on Long-Term Stability of Biological Nitrogen Renoval via Nitrite from Real Landfill Leachate — SUN Hong-wei, GUO Ying, PENG Yong-shen (221) Compositions and Residual Properties of Petroleum Hydrocarbon in Contaminated Sail of the Olifields — HU Di, LI Chaun, DONG Qian-qian, et al. (224) Dynamics of the Mineralization and Trans-Gornation of Rice Photosymbosical Carbon in Paddy Soils - a Batch Incubation Experiment — TAN Li-min, PENC Pei-qie, nt Lee Hung, et al. (233) Effects of Land Use and Abandonment on Soil Labile Organic Carbon in the Karst Region of Southwest China — Liao Hung, and Liao H		
Pollution Distribution and Potential Ecological Risk Assessment of Heavy Metals in Sediments from the Different Eastern Dredging Regions of Lake Tailuu MAO Zhi-gang, GU Xiao-bong, LU Xiao-bing, et al. (186) Study on the Stages of Major Sediments in Diamehi Lake	Regeneration and Transformation of BAPP in Suspended Solids Under Short-term Sediment Disturbance	WU Xiao-fei, LI Da-peng, WANG Ming (171)
Study on the Stages of Major Sediments in Dianchi Lake MAO Zhi-gang, GU Xiao-hong, LU Xiao-ming, et al. (186) Study on the Stages of Major Sediments in Dianchi Lake WANG Kin-yu, ZHOU Feng, YI Xuan, et al. (194) Old Spill Identification Using Partial Surface Fitting Method Based on Concentration-Synchronous-Matrix-Fluorescence Spectra WANG Chun-yan, SHI Xiao-Geng, LI Were-dong, et al. (202) Treatment of Studge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process WANG Xian-li, WANG Shi-feng, WU Jun-feng, et al. (208) Characteristics of Nirification and Denitrification for Simultaneous Nirogen and Phosphorus Removal by Ganular Studge LIU Xiao-ying, LIN Hui, MA Zhao-rui, et al. (214) Study on Long-Term Stability of Biological Nirogen Removal via Nirite from Real Landfill Leachate SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocardon in Contaminated Soil of the Olifields SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocardon in Contaminated Soil of the Olifields SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocardon in readoly Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, LI Ke-lin, et al. (227) Dynamics of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, LI Ke-lin, et al. (224) Liffect of Cuf VI) Anions on the Cuf II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIAO Hong-kai, LI Juan, LIONG Jian, et al. (234) Liffect of Guf VI) Anions on the Cuf II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (234) Liffect of Guf VI) Anions on the Cuf II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (234) Liffect of Guf VI) Anions on th	Sediment Risk Assessment and Heavy Metal Source Analysis in Typical Country Water Level Fluctuated Zone (WLFZ) of the To	Three Gorges ····· AO Liang, LEI Bo, WANG Ye-chun, et al. (179)
Study on the Stages of Major Sediments in Dianchi Lake WANG Xin-yu, ZHOU Feng, YI Xuan, et al. (194) Oil Spill Identification Using Partial Surface Fitting Method Based on Concentration-Synchronous-Matrix-Fluorescence Spectra WANG Chun-yan, SHI Xiao-feng, LI Wendong, et al. (202) Treatment of Sludge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process WANG Xian-li, WANG Shi-feng, Ul Jun-feng, et al. (208) Characteristics of Nitrification and Dentification for Simultaneous Nitrogen and Phosphorus Removal by Granular Sludge LIU Xiao-jing, LIN Hui, Ma Zhao-rui, et al. (214) Study on Long-Term Stability of Biological Nitrogen Removal via Nitrite from Real Landfill Leachate SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocarhon in Contaminated Soil of the Officids Huisting of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, LI Ke-lin, et al. (233) Effects of Land Use and Abandonment on Soil Labile Organic Carbon in the Karst Region of Southwest China Liddon Hong-kai, Li Juan, LONG Jian, et al. (248) Alaminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Cr. (VI) Anions on the Cut (II) Adsorption Behavior of Two Kinds of Caly Minerals in Single and Binary Solution LUI Juan-juan, LIANG Dong-li, Wi Xiao-long, et al. (224) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Cong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, et al. (286) Influence of the Coexistence of Zn² on the Enantinescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn² on the Enantinescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (Pollution Distribution and Potential Ecological Risk Assessment of Heavy Metals in Sediments from the Different Eastern Dredgir	ng Regions of Lake Taihu ·····
Oil Spill Identification Using Partial Surface Fitting Method Based on Concentration-Synchronous-Matrix-Pluorescence Spectra WANG Chun-yan, SHI Xiao-feng, II Wen-dong, et al. (202) Treatment of Sludge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process WANG Xian-li, WANG Shi-feng, WU Jun-feng, et al. (208) Characteristics of Nitrification and Denitrification for Simultaneous Nitrogen and Phosphorus Removal by Granular Sludge LIU Xiao-ying, LIN Hui, MA Zhao-rui, et al. (214) Study on Long-Term Stability of Biological Nitrogen Removal via Nitrite from Real Landfill Leachate SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocarhon in Contaminated Soil of the Oilfields HU Di, II Chuan, DONG Qian-qian, et al. (227) Dynamics of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, II Ke-lin, et al. (233) Effects of Land Use and Abandonment on Soil Labilo Organic Carbon in the Karrs Region of Southwest China LIL JAD Hong-kai, IJ Juan, LONG Jian, et al. (248) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Boa-yuan, QIN Chao, et al. (248) Effect of Gr (VI) Anions on the Cut (II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three Aff Puning in Two Wetland Plants MA Lei-meng, WANG Peng-teng, WANG Peng-teng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Laminescent Bacteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of Biotic Ligand Model and Evaluation of Predicted Results HAU Gran, JANG Fan, MU Yu-feng, et al. (286) Influence of the Co		······· MAO Zhi-gang, GU Xiao-hong, LU Xiao-ming, et al. (186)
Treatment of Sludge Liquor Produced in Deep Dehydration by Photoelectro-Fenton Process WANG Xian-li, WANG Shi-feng, WU Jun-feng, et al. (208) Characteristics of Nitification and Dentification for Simultaneous Nitrogen and Phosphorus Removal by Granular Sludge LIU Xiao-ping, LIN Hui, Ma Zhao-mi, et al. (214) Study on Long-Term Stability of Biological Nitrogen Removal via Nitrite from Real Landfill Leachate SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocarbon in Contaminated Soil of the Oilfields HIU Bi, LI Chuan, DONG Qian-qian, et al. (227) Dynamics of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, LI Ke-lin, et al. (233) Effects of Land Use and Abandonment on Soil Labile Organic Carbon in the Karst Region of Southwest China LIAO Hong-kai, IJ Juan, LONG Jian, et al. (240) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Crf VI) Anions on the Cuf [I] Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Kiao-long, et al. (254) Effect of Flooding Time Length on Myoorrhizal Colonization of Three AM Fungi in Two Wetland Plants MA Lei-meng, WANG Peng-leng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-bong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria LILA Dong-sheng, SHI Xiao-mag, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Darmaceutical Wastewater to Luminescent Bacteria DI Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn ^{2-r} on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus WANG Wan-bin, CHEN Sha, WU Yu-feng, et al. (
Characteristics of Nitrification and Denitrification for Simultaneous Nitrogen and Phosphorus Removal by Gramular Studge LIU Xiao-ying, LIN Hui, MA Zhao-rui, et al. (214) Study on Long-Term Stability of Biological Nitrogen Removal via Nitrite from Real Landfill Leachate SUN Hong-wei, CUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocarbon in Contaminated Soil of the Oilfields HU Di, LI Chuan, DONG Qian-qian, et al. (227) Dynamics of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, LI Ke-lin, et al. (233) Effects of Land Use and Abandomment on Soil Labile Organic Carbon in the Karst Region of Southwest China LIAO Hong-kai, LI Juan, LINGO Dao-yuan, QIN Chao, et al. (240) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Cr (VI) Anions on the Cu(II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants Peliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG King-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Niao-nong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn ² on the Enantioselective Toxicity of Metolachlor to Senedesmus obliquus WANG Wan-bin, CHEN Gai-dong, et al. (292) Simplification of Boite Ligand Model and Evaluation of Predicted Results Wang Alanching and Screening of Coke Industry based on USElox Model HAO Tian, DU Peng-fei, DU Bin, et		
Study on Long-Term Stability of Biological Nitrogen Removal via Nitrite from Real Landfill Leachate SUN Hong-wei, GUO Ying, PENG Yong-zhen (221) Compositions and Residual Properties of Petroleum Hydrocarbon in Contaminated Soil of the Oilfields HU Di, IL Chuan, DONG Qian-qian, et al. (223) Dynamics of the Mineralization and Transformation of Rice Photosymthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, Li Ke-lin, et al. (223) Effects of Land Use and Abandonment on Soil Labile Organic Carbon in the Karst Region of Southwest China LIAO Hong-kai, LJ Juan, LONG Jian, et al. (240) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Cr (VI) Anions on the Cu (II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants MA Lei-meng, WANG Peng-teng, WANG Shu-yaung (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-bong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn ^{2+*} on the Enantisoselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-rian, CHEN Sha, WU Min, et al. (299) Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Simplification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (313) Inhibition of the Acti		
Compositions and Residual Properties of Petroleum Hydrocarbon in Contaminated Soil of the Oilfields Pynamics of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, Li Ke-lin, et al. (233) Effects of Land Use and Abandonment on Soil Labile Organic Carbon in the Karst Region of Southwest China LIAO Hong-kai, Li Juan, LONG Jian, et al. (240) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil KU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Cr (W) Anions on the Cu (II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution ILU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Welland Plants MA Lei-meng, WANG Peng-leng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria IlaNG Dong-sheng, SHI Xiao-roag, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn ²⁺ on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus Hu Xiao-na, ZHANG Shu-xian, CHEN Cai-dong, et al. (292) Simplification of Boite Ligand Model and Evaluation of Predicted Results Wang Wan-bin, CHEN Sha, WU Min, et al. (292) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Suldate-reducing Bacteria in Produced W		
Dynamics of the Mineralization and Transformation of Rice Photosynthesized Carbon in Paddy Soils - a Batch Incubation Experiment TAN Li-min, PENG Pei-qin, Li Ke-lin, et al. (233) Effects of Land Use and Abandomment on Soil Labile Organic Carbon in the Karst Region of Southwest China LiAO Hong-kai, Li Juan, LiONG Jian, et al. (240) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Cr (VI) Anions on the Cu (II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants MA Lei-meng, WANG Peng-teng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, Mu Yu-feng, et al. (286) Influence of the Coexistence of Za ²⁺ on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-xian, CHEN Cai-dong, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ving, SHI Rong-jiu, et al. (319) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Wu Jum-mei, MAA An-zhou, CJI Meng-meng,		
Effects of Land Use and Abandonment on Soil Labile Organic Carbon in the Karst Region of Southwest China LIAO Hong-kai, LI Juan, LONG Jian, et al. (240) Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil XU Hai-bo, ZHAO Dao-yuan, QIN Chao, et al. (248) Effect of Cr(VI) Anions on the Cu (II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants MA Lei-meng, WANG Peng-teng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, Sfll Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn ²⁺ on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-xian, CHEN Cai-dong, et al. (292) Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USElox Model WANG Wan-bin, CHEN Sha, WU Min, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains WU Jun-mei, MA An-zhou, CU Meng-meng, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) Study on the Distinguishing of Root Respiration from		
Aluminum Dissolution and Changes of pH in Soil Solution During Sorption of Copper by Aggregates of Paddy Soil		
Effect of Cr(VI) Anions on the Cu(II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254) Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants MA Lei-meng, WANG Peng-teng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn² + on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, Wu Rong-jun, et al. (384) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, Jamese Deng, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Al		
Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants MA Lei-meng, WANG Peng-teng, WANG Shu-guang (263) Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn² + on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-xian, CHEN Sha, WU Min, et al. (292) Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (336) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-dong, et al. (386) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI		
Preliminary Study on the Relationship Between the Water Quality and the Aquatic Biological Health Status of Taihu Lake ZHOU Xiao-bai, ZHANG Ning-hong, ZHANG Yong, et al. (271) Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria JIANG Dong-sheng, SHI Xiao-rong, CUI Yi-bin, et al. (279) Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn² + on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-xian, CHEN Cai-dong, et al. (292) Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-dong, et al. (365) Electricity Generation of Ch	Effect of Cr(VI) Anions on the Cu(II) Adsorption Behavior of Two Kinds of Clay Minerals in Single and Binary Solution	LIU Juan-juan, LIANG Dong-li, WU Xiao-long, et al. (254)
Acute Toxicity of Three Typical Pollutants to Aquatic Organisms and Their Water Quality Criteria Fixuluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria DU Li-na, YANG Fan, MU Yu-feng, et al. (286) Influence of the Coexistence of Zn²+ on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-xian, CHEN Cai-dong, et al. (292) Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (365) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration	Effect of Flooding Time Length on Mycorrhizal Colonization of Three AM Fungi in Two Wetland Plants	MA Lei-meng, WANG Peng-teng, WANG Shu-guang (263)
Evaluation of the Acute Toxicity of Pharmaceutical Wastewater to Luminescent Bacteria		
Influence of the Coexistence of Zn ²⁺ on the Enantioselective Toxicity of Metolachlor to Scenedesmus obliquus HU Xiao-na, ZHANG Shu-xian, CHEN Cai-dong, et al. (292) Simplification of Biotic Ligand Model and Evaluation of Predicted Results WANG Wan-bin, CHEN Sha, WU Min, et al. (299) Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model HAO Tian, DU Peng-fei, DU Bin, et al. (304) Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (385)		
Simplification of Biotic Ligand Model and Evaluation of Predicted Results		
Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model		
Isolation, Identification and Characterization of a Microcystin-degrading Bacterium Paucibacter sp. Strain CH YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China SHI Jing-jing, GENG Yuan-bo (341) Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (385) County Scale Characteristics of CO ₂ Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)		WANC Wan-bin CHEN Sha WII Min et al. (200)
Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (380) County Scale Characteristics of CO ₂ Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)	Priority Pollutants Ranking and Screening of Coke Industry based on USEtox Model ·····	
Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains		
Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leynus chinensis Steppe in Inner Mongolia, China Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (380) County Scale Characteristics of CO ₂ Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)		
Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, China SHI Jing-jing, GENG Yuan-bo (341) Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (380) County Scale Characteristics of CO ₂ Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate	
Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N2O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (380) County Scale Characteristics of CO2 Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains	
Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N2O Catalytic Decomposition LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (380) County Scale Characteristics of CO2 Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains	
Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leynus chinensis Steppe in Inner Mongolia,	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341)
Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N2O Catalytic Decomposition	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341) HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348)
Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341) HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356)
County Scale Characteristics of CO ₂ Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341) HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356)
	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341) HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356)
Characterization and Soil Environmental Safety Assessment of Super Absorbent Polymers in Agricultural Application	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341) HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371)
	Inhibition of the Activity of Sulfate-reducing Bacteria in Produced Water from Oil Reservoir by Nitrate Bioconversion of Cellulose to Methane by a Consortium Consisting of Four Microbial Strains Factors Influencing the Variability in Soil Heterotrophic Respiration from Terrestrial Ecosystem in China Study on the Distinguishing of Root Respiration from Soil Microbial Respiration in a Leymus chinensis Steppe in Inner Mongolia, Nitrous Oxide Flux at the Water-Air Interface of the Rivers in Nanjing During Summer Effects of Antiseptic on the Analysis of Greenhouse Gases Concentrations in Lake Water Electricity Generation of Surplus Sludge Microbial Fuel Cell Enhanced by Biosurfactant Fe-ZSM-5 Catalysts with Different Silica-Alumina Ratios for N ₂ O Catalytic Decomposition Inhibition of Chlorobenzene Formation via Various Routes During Waste Incineration by Ammonium Sulfate and Urea County Scale Characteristics of CO ₂ Emission's Spatial-Temporal Evolution in the Beijing-Tianjin-Hebei Metropolitan Region	HAO Tian, DU Peng-fei, DU Bin, et al. (304) YOU Di-jie, CHEN Xiao-guo, XIANG Hui-yi, et al. (313) YANG De-yu, ZHANG Ying, SHI Rong-jiu, et al. (319) WU Jun-mei, MA An-zhou, CUI Meng-meng, et al. (327) XIE Wei, CHEN Shu-tao, HU Zheng-hua (334) China SHI Jing-jing, GENG Yuan-bo (341) HAN Yang, ZHENG You-fei, WU Rong-jun, et al. (348) XIAO Qi-tao, HU Zheng-hua, James Deng, et al. (356) PENG Hai-li, ZHANG Zhi-ping, LI Xiao-ming, et al. (365) LU Ren-jie, ZHANG Xin-yan, HAO Zheng-ping (371) YAN Mi, QI Zhi-fu, LI Xiao-dong, et al. (380) WANG Hao, CHEN Cao-cao, PAN Tao, et al. (385)

《环境科学》第6届编辑委员会

主 编:欧阳自远

副主编:赵景柱 郝吉明 田 刚

编 委:(按姓氏笔画排序)

万国江 王华聪 王凯军 王绪绪 田 刚 田 静 史培军

朱永官 刘志培 汤鸿霄 陈吉宁 孟 伟 周宗灿 林金明

欧阳自远 赵景柱 姜 林 郝郑平 郝吉明 聂永丰 黄 霞

黄耀 鲍强潘纲潘涛魏复盛

环维种草

(HUANJING KEXUE)

(月刊 1976年8月创刊) 2014年1月15日 35卷 第1期

ENVIRONMENTAL SCIENCE

(Monthly Started in 1976)
Vol. 35 No. 1 Jan. 15, 2014

		1 77 - 11 - 3 /11 //7			
主	管	中国科学院	Superintended	by	Chinese Academy of Sciences
主	办	中国科学院生态环境研究中心	Sponsored	by	Research Center for Eco-Environmental Sciences, Chinese
协	办	(以参加先后为序)			Academy of Sciences
		北京市环境保护科学研究院	Co-Sponsored	by	Beijing Municipal Research Institute of Environmental
		清华大学环境学院			Protection
主	编	欧阳自远			School of Environment, Tsinghua University
编	辑	《环境科学》编辑委员会	Editor-in -Chief	•	OUYANG Zi-yuan
>m	7-4	北京市 2871 信箱(海淀区双清路	Edited	by	The Editorial Board of Environmental Science (HUANJING
		18号,邮政编码:100085)			KEXUE)
		电话:010-62941102,010-62849343			P. O. Box 2871, Beijing 100085, China
		传真:010-62849343			Tel:010-62941102,010-62849343; Fax:010-62849343
		E-mail; hjkx@ reees. ac. cn			E-mail; hjkx@ rees. ac. en
		http://www.hjkx.ac.cn			http://www.hjkx.ac.cn
出	版	4 学业版社	Published	by	Science Press
-	742	北京东黄城根北街 16 号			16 Donghuangchenggen North Street,
		邮政编码:100717			Beijing 100717, China
印刷装	订	北京北林印刷厂	Printed	by	Beijing Bei Lin Printing House
发	行	斜华出版社	Distributed	by	Science Press
		电话:010-64017032			Tel:010-64017032
		E-mail:journal@mail.sciencep.com			E-mail; journal@ mail. sciencep. com
订 购	处	全国各地邮电局	Domestic		All Local Post Offices in China
国外总统	せい とうけい とうしゅう とうしゅう とうしゅう とうしゅう とうしゅう とうしゅう とうしゅう とうしゅう しゅう しゅう しゅう しゅう しゅう しゅう しゅう しゅう しゅう	中国国际图书贸易总公司	Foreign		China International Book Trading Corporation (Guoji
		(北京 399 信箱)			Shudian), P. O. Box 399, Beijing 100044, China

中国标准刊号: ISSN 0250-3301 CN 11-1895/X

国内邮发代号: 2-821

国内定价:90.00元

国外发行代号: M 205

国内外公开发行