

IX International Conference

ELEMENT CYCLE IN THE ENVIRONMENT BIOACCUMULATION – TOXICITY – PREVENTION

AGENDA

September 22nd

- 08.00 – 09.00 Participants registration
09.00 – 09.20 Opening of the Conference – **Prof. Barbara Gworek**
Colonel Andrzej Petrulewicz, MSc. Eng.

Session I

Chairperson: Prof. Alina Maciejewska

- 09.20 – 09.40 Temporal and spatial changes in the heavy metal contamination in Poland.
Barbara Godzik, P. Kapusta
- 09.40 – 10.00 The comparison of bioindication methods in the assessment of environmental pollution with heavy metals.
Wojciech Dmuchowski, D. Gozdowski, A. H. Baczewska, P. Brągoszewska
- 10.00 – 10.20 Multianionic analysis of environmental materials by ion chromatographic technique.
Maria Balcerzak, J. Janiszewska
- 10.20 – 10.40 Suitability of DGT method for assessment of arsenic bioavailability and its uptake by plants – the example of *Holcus lanatus*.
Karolina Lewińska, A. Karczewska
- 10.40 – 11.00 *Coffee break*

Session II

Chairperson: Prof. Józef Chojnicki

- 11.00 – 11.20 Physico-chemical properties of surface runoff from wooded catchment: potential effects of surface runoff on the water quality of small lake.
P. Klimaszyk, **Piotr Rzymiski**
- 11.20 – 11.40 Do local sewage treatment plants influence on the receiver water quality?
Elżbieta Królak, M. Korycińska, K. Diadik, S. Godziuk
- 11.40 – 12.00 Genotyping of *Escherichia coli* strains isolated from bioaerosols and sewages from municipal wastewater treatment plant.
Karol Korzekwa, P. Janyszko
- 12.00 – 12.20 Phosphorus in atmospheric precipitation.
Andrzej Sapek, B. Sapek
- 12.20 – 13.20 *Poster Session – Bioaccumulation, Toxicity, Prevention*
- 13.20 – 13.40 *Summary of Poster Session*
- 13.40 – 14.20 *Lunch*

Session III

Chairperson: Prof. Tadeusz P. Żarski

- 14.20 – 14.40 Environmental risk management for contaminated soil and groundwater at military airbases in Poland: security, protection, minimisation of impacts.
Robert Woźniak
- 14.40 – 15.00 Ammunition disposal technologies.
Paweł Kwiecień
- 15.00 – 15.20 Selected heavy metals contamination from illegal landfills soil in Lipnica Mała and Domaradz.
A. Szwałec, P. Mundała, **Agnieszka Petryk**
- 15.20 – 15.40 Content of Cd, Pb, Zn and Cu in farmland soil in vicinity of municipality wastes in Słopnice Szlacheckie and Jasło.
A. Szwałec, P. Mundała, **Dawid Bedla**
- 15.40 – 16.00 Zooremediation of soils polluted by petroleum.
Małgorzata A. Józwiak, P. Rybiński
- 16.00 – 16.20 *Coffee break*

Session IV

Chairperson: Prof. Stanisław Kalembasa

- 16.20 – 16.40 The current knowledge of ecotoxicological threats connected with GMO.
Tadeusz P. Żarski, H. Żarska, T. Majdecka
- 16.40 – 17.00 The effect (impact) of GMO on the environment and human's health, based on the awareness of the small towns and villages inhabitants' in the Plock and Olecko area.
Piotr Michalik
- 17.00 – 17.20 Histopathological changes in posterior kidney of carp exposed to the pyrethroids.
Hanna Lutnicka, A. Ludwikowska
- 17.20 – 17.40 Histopathological changes in liver of fish exposed to subtoxic concentrations of pyrethroids.
Agnieszka Ludwikowska, H. Lutnicka
- 17.40 – 18.00 An environmental impact: cross – compliance rules respected by Polish farm holdings.
Grażyna Niewęłowska
- 18.00 – 18.30 *Discussion*
- 18.30 *Official Dinner*

Transportation to hotels after Dinner will be provided

POSTER SESSION
Bioaccumulation, Toxicity, Prevention

1. The content of zinc in surface horizons of soils with natural and anthropologically increased concentration of calcium carbonates. **H. Jaworska, A. Bartkowiak**
2. Fertilization with biomass ashes as a source of trace elements for soils. **T. Ciesielczuk, G. Kusza, A. Nemš**
3. Harmful elements in soils and in carrots produced in allotment gardens „Zabobrze” in Jelenia Góra. **B. Gałka, A. Mentel**
4. Impact of sedimentation waters on the soils absorbing complex in the region of “Żelazny Most” tailings impoundment. **D. Ochman, P. Jezierski**
5. Content of soluble cations and anions in the water extracts from the saline soils supplied with flotation water infiltrating from tailings impoundment “Żelazny Most”. **D. Ochman, D. Kawałko, J. Kaszubkiewicz, P. Jezierski**
6. Sulphate sulphur in soils of upper spruce forest zone in the Karkonosze National Park. **K. Szopka, A. Karczewska, C. Kabała, K. Kulczyk**
7. The amounts of easily soluble copper forms in polluted soils as affected by application of various kinds of sewage sludge. **A. Karczewska, L. Gersztyn, B. Gałka**
8. Occurrence and mobility of Zn, Pb and Cd in soils polluted by mining and metallurgy industry. **A. Kicińska**
9. Influence of soil hydrological degradation on stone coal mine exploitation areas on soil maps content. **S. Klatka, K. Boroń, M. Ryczek**
10. Effects of land-use types on content of heavy metals and their distribution in profiles of Arenosols. **M. Kobierski, E. Staszak, K. Kondratowicz-Maciejewska, A. Ruszkowska**
11. Leaching of nickel from soil samples of the Łódź agglomeration. **B. Smolińska, K. Król**
12. The concentration of iron in soil of Łódź city. **K. Król, B. Smolińska**
13. Influence of Power Station and Mine „Turów” on contents of selected heavy metals in cultivated soils. **E. Kucharczak, A. Moryl**
14. Cadmium content in soils of the selected forest complexes in Opole region. **G. Kusza, T. Ciesielczuk, B. Gołuchowska**
15. The content of selected heavy metals in soils in landscape park „Dolina Baryczy”. **B. Łabaz, A. Bogacz**
16. Bioavailability of Cd, Pb, and Zn in heap material. **M. Majewska, E. Kurek, A. Słomka**
17. Vanadium mobility in soils exposed for polluting with petroleum-derived substances. **M. J. Małuszyński, I. Małuszyńska**
18. Phosphorus speciation in sewage sludge produced with application of the EvU-Perl. **E. Bezak-Mazur, A. Mazur**
19. Effect of surfactants on the sorption of izoproturon in soils. **P. Muszyński**
20. Sorption and degradation of phenoxy acid, imidazolinone, triazine and sulfonylurea herbicides in soils. **P. Muszyński**
21. Monitoring of urban soils pollution in Łódź of the years 2008–2010. **M. Niedbała, B. Smolińska**
22. Recondition properties of ashes in soil. **M. Niedbała**
23. Content of iron and aluminum in the profiles of variously utilized rusty soils. **W. Martyn, B. Niemczuk**
24. The content of soluble forms of trace elements in soil in three summer crop field experiment with willow. **D. Nowak**
25. The effect of topsoil's particle size composition on accumulation of the selected heavy metals (Zn, Cu, Pb, Cd, Ni i Cr) in the vicinity of spoil bank of ZGH "Boleslaw" in Bukowno. **M. Pająk, J. Socha, S. Mucha**
26. The content of chromium in organic soil horizons in Legnica region. **K. Kołodziejczyk, K. Tomaszewska, R. Pieprzka**
27. Acidity and buffering properties of soils of the Biała Podlaska Commune. **J. Raczuk**
28. Spatial and profile distribution of mercury in urbanozems of Bydgoszcz city. **S. Różański, H. Dąbkowska-Naskręt**
29. Comparison of methods for determination of soil erodibility factor on the example of the Kasińczanka stream basin. **M. Ryczek, J. Stabryła, S. Klatka, E. Kruk**
30. Determination of humus usefulness in limiting of soluble fluoride content in soil. **B. Smolik, A. Telesiński, J. Szymczak, H. Zakrzewska**
31. Comparison of cadm content in forest soil ekotohumus horizons of East and West Karkonosze. **J. Waroszewski, K. Szopka, C. Kabała, A. Karczewska**
32. Content of zinc, copper and lead in surface level of sod soils in Wrocław urban parks. **A. Dradrach, K. Szopka, A. Bogacz, A. Karczewska**
33. Interaction between cadmium, lead and copper effects on o-diphenol oxidase activity in soil. **A. Telesiński, M. Chruściel, J. Szymczak**

34. Effect of compost, zeolite and calcium oxide on some properties of soil contaminated by tri- and hexavalent chromium. **M. Wyszowski, M. Radziemska**
35. The influence of liming and sewage sludge rates on the fractions lead in soil, in pot experiment. **E. Malinowska, D. Kalembasa**
36. The content of some elements in soils around the municipal waste dump. **K. Pakuła**
37. Environmental risk assessment of selected pharmaceuticals present in surface waters in relation to cyanobacteria and plants. **K. Affek**
38. Use of GIS methods for evaluation of water erosion threat on example of the Smugawka river basin in the Beskid Wyspowy. **M. Ryczek, K. Boroń, S. Klatka, J. Stabryła, E. Kruk**
39. Assessment of relationship between the content dissolved organic carbon in the soil and mineral forms of nitrogen in the shallow ground waters from farmstead. **I. Burzyńska**
40. Rainwater treatment. **J. Piekutin**
41. The monitoring of water pollution level in low-retention reservoirs in Sokółka. **A. Siemieniuk, J. Szczykowska**
42. Development of concentration of biogenic compounds in Czapielówka reservoir waters. **J. Szczykowska, A. Siemieniuk**
43. Heavy metals in Upper Nitra riverside. **A. Vollmannová, M. Kujovský, J. Árvay, L. Harangozo, J. Tóthj**
44. Bioremediation of metals in the context of physiological status of plants. **J. Augustynowicz, A. Kołton, A. Baran, A. Świdorski**
45. Assessment of the health of trees Crimean linden and changes in chemical composition of leaves in years 2000 and 2009. **A. H. Baczevska, W. Dmuchowski, D. Gozdowski, P. Bągoszewska**
46. Some quality indicators of arable plants. **A. Badora, J. Kozłowska-Strawska**
47. The relationship of heavy metals (Cd, Pb) content in soil to their content in amaranth seeds. **J. Bystrická, A. Vollmannová, J. Musilová, E. Margitanová**
48. The assessment of impact of military skin decontaminants on *Lemna minor*. **E. Chrzanowska, R. Kalinowski, M. Brytan**
49. Development of antioxidant activity of summer savory (*Saturejahortensis* L.) depending on fluoride and selenium content in medium. **J. Cichočka, M. Śnioszek, A. Telesiński, H. Zakrzewska**
50. Application of chromatographic methods to determinate for residues of pesticides in fruits and vegetables. **R. Czczko**
51. Comparison the degree of hydration in of different parts of helianthus tuberoses in aspect of their suitability as a biofuel. **R. Czczko**
52. Zinc accumulation in cooksfoot in dependence on kind of soil, pH, and Cd or Pb soil contamination. **J. Domańska, T. Filipek**
53. Analysis of heavy metals content in soil and dandelion leaves in the vicinity of a busy urban street using a handheld XRF spectrometer. **K. Dzierżanowski, S. W. Gawroński**
54. Effect of lead ions on some physiological processes in seedlings of common buckwheat (*Fagopyrum esculentum* Moench). **A. Grzesiuk, I. Czułowska**
55. Chemical properties of ash from brown coal burning as substratum of biological reclamation of dump. **M. Gwiżdż, J. Weber, S. Strączyńska**
56. Effect of *pinus sylvestris*, *betula pendula* and *robinia pseudoacacia* on the properties of substratum of reclaimed brown coal ash dump. **M. Gwiżdż, J. Weber, S. Strączyńska**
57. The effect of salinity selected lawn grass species cultivated with the hydrogels amendment. **A. Hadam, M. Wrochna, Z. Karaczun**
58. The greenhouse production of native plants with tolerance trait to heavy metals useful in reclamation of post-flotation wastes. **E. Hanus-Fajerska, E. Muszyńska**
59. The influence of copper ions on the growth of inbred lines of rye seedlings (*Secale cereale* L.). **H. Kubicka, N. Jaroń**
60. Preservation and evaluation *ex situ* of historical varieties of apple trees on the area of Polish Academy of Sciences Botanical Garden - Center for Biological Diversity Conservation in Powsin. **A. Karczewska, J. Puchalski, R. Rawski**
61. Physical-chemical properties of soils in forest *galio sylvatici-carpinetum* of landscape park „Jezierzyca River Valley”. **D. Kawałko, P. Jezierski, J. Kaszubkiewicz**
62. Comparison of mercury concentration in the arable lands of jeleniogórski and ząbkowicki district. **P. Jezierski, J. Kaszubkiewicz, D. Kawałko, D. Ochman**
63. The effect of KI and KIO₃ fertilization on vegetative growth as well as nitrogen metabolism and photosynthetic activity in leaves of tomato grown in hydroponics system NFT. **S. Smoleń, A. Kołton, J. Wierzbińska**
64. Genetically modified organisms – prospects of their use in the modern agriculture. **J. Kozłowska-Strawska, A. Badora**
65. Participation of chosen *Polygonum* species in the weeding of agrocenoses in Wigierski National Park. **H. Kubicka, T. Skrajna, M. Matusiewicz**

66. Evaluation of zinc and lead content in selected organs of wheat growing in vicinity of the main road Warszawa – Poznań. **W. Kwasowski**
67. Effect of various methods of KIO₃ application on iodine accumulation and nutritional value of lettuce cultivated in hydroponic system. **I. Ledwożyw-Smoleń, S. Rożek, S. Smoleń, P. Strzetelski**
68. The uptake of heavy metals by plants at differentiated soil reaction and content of organic matter. **J. Kwiatkowska-Malina, A. Maciejewska**
69. Characteristics of *Polygonum persicaria* in agrocenosis in Wigierski National Park and its borders. **M. Matusiewicz, H. Kubicka, T. Skrajna**
70. Concentration of manganese and iron in the green belt roadside. **I. Mijalska-Szewczak, J. Szyszlak-Bargłowicz**
71. Cultivar as one of the factors affecting the accumulation of risk elements in potato tubers (*Solanum tuberosum* L.). **J. Musilová, D. Jónášová, Z. Poláková**
72. Accumulation of particulate matter, heavy metals and polycyclic aromatic hydrocarbons in canopy of small-leaved lime. **B. Nawrot, K. Dzierżanowski, S. W. Gawroński**
73. Assessment of putative effect of pear dormant bud hardening on increase of resistance to liquid nitrogen freezing. **M. Niedzielski, K. Woliński**
74. *Oomycota* in the selected reservoirs in the Białowiecki National Park. **M. Orłowska, R. Krzyściak-Kosińska, H. Chomutowska, H. Ostrowska**
75. Physicochemical properties of waste plant biomass intended for use as an energy source. **J. Pawłowski, H. Wróblewska, W. Cichy, M. Witczak, M. Walkowiak, M. Komorowicz**
76. Effect of brassinosteroids on the accumulation of some elements in the leaves of *Zea mays* L. and biosynthesis of chlorophyll pigments. **K. Pazurkiewicz-Kocot, A. Kita, A. Haduch**
77. Alachlor degradation by microscopic filamentous fungus of *Paecilomyces marquandii* IM 6003 in the conditions of oxygen limitation and differential salinity. **M. Słaba, M. Piątek, J. Długoński**
78. Changes of *Cylindrospermopsis raciborskii* and *Aphanizomenon flos-aquae* chlorophyll fluorescence under the influence of lead. **B. Poniedziałek, P. Rzymiski, M. Kokociński, L. Burchardt, K. Wiktorowicz**
79. Evaluation of metals content in herbs and spices available on the Polish market. **A. Bielicka-Giełdoń, E. Ryłko, I. Bojanowska**
80. The copulation of Zn and K in lichens present in chosen region of Eastern Poland. **E. Sadowska, P. Radzikowski**
81. The effect of KI and KIO₃ fertilization on iodine uptake efficiency and content of mineral elements in leaves and fruits of tomato cultivated in hydroponics system NFT. **S. Smoleń, W. Sady, J. Wierzbińska**
82. Estimation of pruned biomass through the adaptation of classic dendrometry on urban forests: case study of *Sophora japonica*. **M. Sajdak, B. Velazquez-Marti**
83. The effect of concentrate of humic substances on effectiveness iodine biofortification and biological quality of spinach plants. **S. Smoleń, I. Ledwożyw-Smoleń**
84. Effect of cadmium salt on the activity of oxidative stress enzymes in soil and corn (*Zeamaysvar. Saccharata*). **J. Szymczak, D. Klódka, B. Smolik, M. Pawlica**
85. The possibility of utilization some biochemical parameters in the estimation of the influence Refine 75 WG herbicide in the crop protection of the corn (*Zea mays var. saccharata*). **D. Klódka, J. Szymczak, D. Ziemann**
86. Fluoride accumulation in chosen hydromacrophyte species depending on these ion content in water and sediments of Gunica river. **A. Telesiński, E. Środa, M. Śnioszek**
87. The relationship of heavy metal contents in soils to their content in chosen legume seeds. **M. Timoracká, A. Vollmannová, D. Bajčan, D. S. Ismael**
88. The effect of iodine form on yield quantity and biological quality of tomato cultivated in hydroponics system NFT. **S. Smoleń, J. Wierzbińska, M. Liszka-Skoczylas**
89. Application of cryogenic methods for long-term storage of plant material. **M. Niedzielski, K. Woliński, J. Puchalski**
90. Macroelement content and selected biometric characteristics needles of Scots pine (*Pinus sylvestris* L.) growing on reclaimed post mining sites in Poland. **M. Pietrzykowski, B. Woś, Sz. Huma**
91. The content of macro and microelements in the test plants grown on the composts obtained of industrial and post-use wood waste. **H. Wróblewska, E. Kozik, M. Czajka**
92. The changes in nickel and chromium content in the biomass of goat's rue (*Galega orientalis* Lam.) depending on the duration of the cultivation and development stage. **B. Symanowicz, S. Kalembasa**
93. The content of Ti and As in the biomass of annual ryegrass (*Lolium perene* L.) and soil fertilized with the bed after mushroom production. **D. Kalembasa, B. Wiśniewska**
94. The content of iron and manganese in plants fertilized with sewage sludge composted with CaO and brown coal ash. **A. Wysokiński**
95. Estimation of toxicity and microbiological hazards of composts containing lignincellulose and keratin wastes. **J. Bohacz**

96. Ratio of spherical and cylindrical bacteria in surface water of forest protected areas. **H. Chomutowska**
97. Occurrence of crude-oil, kerosene and gasoline degrading microorganisms in the water of some lakes in the Mazurian lake district. **S. Niewolak, Z. Filipkowska, A. Gotkowska-Płachta, E. Kraszewska**
98. Microorganisms sensitivity on biocides intended for archaeological wood prevention in Biskupin. **J. Gajewska, J. Cywińska, L. Babiński**
99. Role of antagonistic *Pseudomonas* sp. bacteria in elimination of environmental toxic fungi from *Fusarium* genus. **J. Gajewska, M. Kurowska**
100. Profitable influence of prebiotics and acidic preparate on intestine mikroflora state. **J. Gajewska, J. Bucka, A. Żabik, J. Riedel, M. Michalczyk**
101. Halophilic microorganisms in petroleum produced waters. **L. Jarzynowska, D. Wolicka, A. Gójska**
102. Microbiological and biochemical activity of degraded soil reclaimed with the use of various wastes. **J. Joniec**
103. Effect of reclamation treatments on microbiological transformations of carbon in soil degraded by the sulphur industry. **J. Joniec, J. Furczak**
104. Bacteriological indicators of pollution and sanitary state of mid-forest wetlands near Olsztyn. **S. Niewolak, W. Rodziewicz, R. Czajka, W. Rodziewicz**
105. Microorganisms in geological processes. **D. Wolicka, A. Gójska, L. Jarzynowska**
106. ICP-DRCMS technique in multielemental analysis of environmental materials. **A. Borkowska, D. Lech, J. Janiszewska, M. Balcerzak**
107. Biological oxidation of monoaromatic hydrocarbons under sulphates reduction conditions. **A. Gójska, D. Wolicka, L. Jarzynowska**
108. The present state and anthropogenic changes of peat-bog ecosystem Puścizna Długopole in the Orawsko-Nowotarska Basin. **M. Malec**
109. Mercury in the environment. **I. Małuszyńska, A. Popenda, M. J. Małuszyński**
110. Capping as a method of prevention of polluted sediments. **A. Popenda**
111. Calcium and magnesium in atmospheric deposition. **B. Sapek, A. Sapek**
112. PAH and residues of chemicals in edible fats. **M. Bojanowska**
113. Content of selected macro- and microelements in milk and rennet whey. **A. Brodziak, J. Król, A. Litwińczuk**
114. Monitoring study of toxic elements in food of animal origin. **J. Szkoda, A. Nawrocka, M. Kmiecik, J. Żmudzki**
115. Estimation of selected heavy metals content in bread flours. **G. Zając, J. Szyszlak-Bargłowicz**
116. Law regulations in management of free living hunting animals. **M. Chudzicka-Popek**
117. Attempt to assess the impact of pollutants in the urban environment on the basis of the presence of thrips. **K. Czepiel-Mil, D. Kowalczyk-Pecka**
118. Influence of vitamin C on zinc absorption. **A. Grosicki, K. Dudek**
119. Organ distribution of supplements of zinc in rats fed a diet fortified with bentonite. **A. Grosicki**
120. The effect of variable soil fertilisation on entomopathogenic nematodes *Steinernema carpocapsae* (Weiser, 1955). **J. Jarmuł- Pietraszczyk, M. Kamionek, Ł. Milczarek**
121. Accumulation of heavy metals in selected mollusc species: lower Bug River and its floodplain water bodies. **E. Jurkiewicz-Karnkowska**
122. Ecotoxicological assessment of selected chemical warfare agents towards crustacean *Daphnia magna*. **R. Kalinowski, E. Chrzanowska, M. Brytan**
123. The effect of lead, manganese and cadmium ions on entomopathogenic nematodes *Steinernema carpocapsae* (Weiser, 1955). **J. Jarmuł-Pietraszczyk, M. Kamionek, A. Kołodziejki**
124. The effect of cadmium and copper on hematopoietic activity of carp head kidney. **E. Kondera**
125. Activity of glutathione S-transferases in selected mutants *Drosophila melanogaster* after long-term treatment with malathion. **B. Kontek, R. Kontek**
126. Cobalt and nickel content in the hooves and muscles of free ranging European bisons. **T. Kośla, E. M. Skibniewska, M. Skibniewski, G. Urbańska-Słomka**
127. The synanthropic slugs as bioconcentrators of heavy metals. **D. Kowalczyk-Pecka, K. Czepiel-Mil**
128. Malformations of babel (*Barbus barbus*) larvae induced by copper and cadmium. **K. Ługowska, J. Kubik**
129. Lead bioaccumulation in different tissues of Prussian carp (*Carassius gibelio* B.) as the effect of 2-years period of dietary exposition to various doses of this metal. **E. Łuszczek-Trojnar, E. Drag-Kozak, W. Popek**
130. Heavy metals in some tissues and organs of rainbow trout (*Oncorhynchus mykiss*) fish species in relation to age and season. **E. Drag-Kozak, E. Łuszczek-Trojnar, W. Popek**
131. Copper content in hair of free living and domestic cats from the region of Warsaw. **E. M. Skibniewska, M. Skibniewski, T. Kośla**
132. Chosen trace elements content in the dairy cows muscles. **M. Skibniewski, E. M. Skibniewska, T. Kośla**

133. Realization of „Programme of removal of asbestos and wares containing asbestos used on Poland territory” in Siedlce and Łosice districts. **J. Deska, A. Bombik, J. Raczuk**
134. Characteristic of malachite green and Cd, Cu, Pb ions sorption by autoclaved rapeseed oil cake waste. **A. Jasińska, K. Paraszkiwicz, J. Długoński**
135. Recycling of vehicles withdrawn from use as the method reducing the quantity of hazardous wastes in the environment. **I. Małuszyńska, B. Bielecki, A. Wiktorowicz, M. J. Małuszyński**
136. Anion leachability from the top layer of the Cracow Soda waste dumps. **R. Wójcik, Ł. Zawadzki**
137. Planting of poplar on tannery waste: effective and economical approach to environmental protection. **A. Zemleduch, P. Pluciński, K. Ufnalski, G. Lorenc-Plucińska**
138. Speciation of heavy metals in bottom sediments of the Kozłowa Góra Reservoir. **L. Dąbrowska**
139. Impact of a static magnetic field of 7 mT on activated sludge organisms in the process of formaldehyde biodegradation. **A. Rutkowska-Narożniak, E. Pajor**
140. Differentiation degree of environment friendly agriculture’s territorial development in Poland. **B. Bujanowicz-Haraś**
141. Relevance of biogas plant construction in rural areas. **K. Bzdawka-Piątkowska**
142. Agriculture as one of total phosphorus sources in water of Ślina river. **M. Rauba, E. Rauba**
143. Social aspects of choice of wastewater treatment system in non-urbanized area. **K. Rauba**
144. Parapharmaceutical products of unknown origin and the risk of mercury poisoning on the example of medicinal preparation „Fufang Luhui Jiaonang”. **K. Bojarska, Z. Bzowski, R. Sołtysek**
145. Evaluation of the arsenic environmental pollution on the basis of different bioindicative methods. **W. Dmuchowski, A. H. Baczewska, D. Gozdowski, P. Brągoszewska**