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DAFTAR PUSTAKA

Abdul, W.R., M.H. Andullah and V.L. Wan. 2009. Accumulation and Depuration on Heavy Metals in the Hard Clam (*Meretrix meretrix)* under Laboratory Conditions. *Tropical Life Sciences Research* 20 (1) 17-24

Abdullah, W.S and Sarem, S.M. 2010. The Potential of *Chrysanthemum* and *Pelargonium* for Phytoextraction of Lead – Contaminated Soils. *Jordan Journal of Civil Engineering* 4 (4)

Adji, B.K. 2018. Potensi *Impatiens balsamina* L. sebagai agen fitoremediasi tanah tercemar limbah industri perak Kotagede: laju penyerapan, laju eliminasi, dan bioakumulasi subselullar. (Skripsi belum terpublikasi). Universitas Gadjah Mada . Yogyakarta. Indonesia

Agusnar, H. 2008. *Analisa Pencemaran dan Pengendalian Lingkungan.* USU Press. Medan

Armiyati, Laely. 2014. Industri perak Kotagede Yogyakarta melawan badai krisis. *Sejarah dan Budaya* 8(2).

Baath, E., M. Diaz-Ravina, A. Frostegard, and C. Campbell. 1998. Efect of metal-rich sludge amendments on the soil microbial community. Appl. Environ. Microbiol. 64:238-245.

Baker AJM, Brooks RR. 1994. Terrestrial higher plants which hyperaccumulate metallic element : a review of their distribution, ecology and phytochemistry. *Biorecovery.* 1: 81–126.

Birge, W. J., and J. A. Black. 1979. Effects of copper on embryonic and juvenile stages of aquatic animals. In Copper in the Environment Part II. Health efects, ed. J. O. Nriagu, 373-399. New York: John Wiley and Sons.

Buchwalter,D.B., D.J. Cain., W.H. Clements and S.N. Lucima. 2007. Using biodynamic models to Reconicle Differences between Laboratory Toxicity Test and Field Biomonitoring with Aquatic Insects. *Environ Science Technol* 41:4821-4828

Bollard, E.G. 1983. *Encyclopedia of plant physiology new series 15B.* Springer. Berlin. P:695-755

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Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Brown, P.H., Welch, R.M and Cary, E.E. 1987. Nickel: A Micronutrient Essential for Higher Plants. *Plant Physiology* 85: 801-803

Brown,SL.L., R.L. Chaney., J.S. Angle and J.M. Baker. 1994. Phytoremediation potential of *Thlaspi caerulescens* and bladder campion for Zinc and Cadmium contaminated soil. *Journal Environmenta Qual.* 23:1151-1157

Chen, C., Huang, D and Liu,J. 2012. Function and toxicity of nickel in plants: recent advances and future prospects. *Clean* 37 (4-5):304-313

Fu, X.P., C.M. Dou., Y.X. Chen., X.C. Chen., J.Y. Shi., M.G. Yu and J. Xu. 2011. Subselullar distribution and Chemical Forms of Cadmium in *Phytolacca americana L. Hazard Mater* 186:103-107

European Commission Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment and in particular of the soil, when sewage sludge is used in agriculture. European Commission. Brussels

Fahruddin. 2010. *Bioteknologi Lingkungan*. Penerbit Alfabeta. Bandung

Genrich, I., Bund, G.I., Dixon, D.G.M., Glick, B.R. 1998. A plant growth promoting bacterium that decrease nickel toxicity in seedling. *Appl Envrn. Microbiol* (64): 3663-3668

Girdhar, M., N. Sharma, H., H. Rehman, A. Kumar, and A. Mohan. 2014. Comparative assesment for hyperaccumulatory and phytoremediation capability of three wild weeds. *Biotech* 4:579-589.

Haridjaja, O., Baskoro, D.P.T and Setianingsih, M. 2013. Perbedaan Nilai Kadar Air Kapasitas Lapang Berdasarkan Metode Alhricks, Drainase Bebas, dan *Pressure Plate* pada Berbagai Tekstur Tanah dan Hubungannya dengan Pertumbuhan Bunga Matahari (*Helianthus annuus* L.). *Jurnal Tanah Lingkungan* 15 (2) 52-59

Hardiani, H. 2009. Potensi tanaman dalam mengakumulasi logam Cu pada media tanah terkontaminasi limbah padat industri kertas. *BS*, 44 (1): 27-40

Hutagalung, H.P., D. Setiapermana and S.H. Riyono. 1997. *Metode Analisis Air Laut, Sedimen dan Biota* ed 2. Puslitbang Oseanologi LIPI. Jakarta. p:75

Hausinger, R.P. 1997. Metallocenter assembly in nickel-containing enzymes. *J.Biol.Inorg.Chem* (2): 279-286

POTENSI KRISAN (Chrysanthemum morifolium Ramat.) SEBAGAI AGEN FITOREMEDIASI TANAH TERCEMAR LIMBAH
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Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Iman, Budisantoso dan F, Elfy. 2005. Studi berbagai tengas tanah dan teknologi sonic bloom dalam upaya meningkatkan pertumbuhan serta hasil tanaman kedelai. *Biologi UNSOED* (91)

Kemendagri. 2012. Membedah potensi perak di Indonesia. Ditjen PEN/MJL/003/4/2012. Jakarta.

Kramer, U et all. 1996. Free histidine as a metal chelator in plants that accumulate nickel. *Nature* (379): 635-638

Krebs, C.J. 2013. *Ecology : The Experimental Analysis of Distribution and Abundance.* Sixth Edition. Pearson Education Limited. New York. p: 405-413.

Kupper, H et al. 2001. Cellular compartementation of nickel in the hyperaccumulators *Alyssum lesbiacum, Alyssum bertolonii* and *Thlaspi goesingense*. *J.Exp Bot* (52) : 2291-2300

Kozlow, M.V. 2005. Pollution resistance of mountain birch, *Betulla pubescens, czerpanovii,* near the cooper-nickel smelter: Natural selection or phenotypicacclimation. *Chemosphere* (59): 189-197

Laghlimi M, Baghdad B, El Hadi H, and Bouabdli A. 2015. Phytoremediation mechanism of heavy metal contaminated soils: a review. Open Journal of Ecology 5: 375-388.

Li, M.S. 2006. Ecological restoration of mine land with particular reference to the metalliocolous and non-merallicolous populations of *Silene vulgaris (*Moench) Garcke. *Environ Exp Botanica* 59:84-91

Liu, D.H., W.S. Jiang and C. J. Liu. 2000. Uptake and accumulation of lead by roots, hypocotyls and shoots of Indian mustard (*Brassica juncea L). Bioresour Technol.* 7: 273-277

Lorestani, B., Yousefi, N and Cheraghi, M. 2013. Phytoextraction and Phytostabilization potential of plants grown in the vicinity of heavy metal- contaminated soils: a case study at an industrial town site. *Environmen Monit Assess* 185:10217-10223

Lozano, E.R., L.E. Hernandez., P. Bonay and R.O Carpena. 1997. Distribution of Cadmium in Shoot and Root Tissues of Maiza and Pea Plants: Physiological Disturbance. *Journal of Experimental Botany* 48 (306) 123-128

Manara, A. 2012. Plants and heavy metals :27-54. doi :10.1007/978-94-007-4441-7

Okieimen, F.E and Wuana, R.A. 2011. Heavy Metals in Contaminated Soils: A Review of Sources, Chemistry, Risks and Best Available Strategies for Remediation. *ISRN Ecology.*

POTENSI KRISAN (Chrysanthemum morifolium Ramat.) SEBAGAI AGEN FITOREMEDIASI TANAH TERCEMAR LIMBAH
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Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

MetCalf and Eddy. 2003. *WastewaterEngineering : Treatment, Disposal and Reuse 4th Ed.* Mcgraw –Hill Book. New York.

Milner. M.J and Kochian, L.V. 2008. Investigating heavy metal hyperaccumulation using *Thlaspi caerulescens* as a model system. *Ann Bot* (102): 3-13

Molas, J. 1997. Changes in morphological and anatomical structure of cabbage (*Brasicca oleracera* L.) outer leaves and ultrastructure of their chloroplasts caused by an invitri excess of nickel. *Photosynthetica* (34): 513-522

Palar, Hendaryo. 1994. *Pencemaran dan Toksikologi Logam Berat.* Rieneka Cipta. Jakarta

Pequerul, A., C. Perez., P. Madero., J. Val and E. Monge. 1993. A Rapid Wet Digestion Method for Plant Analysis. *Estacio Experimentel de Aula Dei, CSIC* 202 (50080)

Peralta, J.R., L. Gardea-Torresdey., K. J. Tiemann., E. Gomez., S. Arteaga., E. Rascon., and J. G. Parsons. 2001. Uptake and Effect of Five Heavy Metals on Seed Germination and Plant Growth in Alfalfa (*Medicago sativa). Bulletin Environmental Contaminants Toxicology* (66) 727-734

Pivetz, B 2001. Phytoremediation of contaminated soil and ground water at hazardous sites. EPA/540/S-01/500.

Prasad, M, N, V. 2003. Metal hyperaccumulation in plants – Biodiversity prospecting for phytoremediation technology. *Electronic Journal of Biotechnology* 6 (3)

Purkayashta, T. J., T. Viswanth, S. Bhadararay, P. K. Chhonkar, P. P. Andhikari, and K. Suribabu. 2008. Phytoextraction of zinc, copper, nickel, and lead from a contaminated soil by different species of Brassica. *International Journal of Phytoremediation* 10:63-74.

Rahmaniar, I., and I. Kamil. 2015. Remediation of Cu in the contaminated soil by using *Equisetum debile* (Horsetail). *Journal of Engineering and Technological Science* 47(2):12-136.

Riesen, O and Feller, U. 2005. Redistribution of nickel, cobalt, manganese, zinc and cadmium in the root system and transfer to the leaves in young wheat plants. *Ann. Bot.* (96): 425-434

Salt, D.E et al. 1995. Phytoremediation: A novel strategy for the removal of toxic metals from the environment using plants. *Biotechnology* (13): 468-474

POTENSI KRISAN (Chrysanthemum morifolium Ramat.) SEBAGAI AGEN FITOREMEDIASI TANAH TERCEMAR LIMBAH
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Universitas Gadjah Mada, 2015 | Diunduh dari http://etd.repository.ugm.ac.id/

Schor-Fumbarov, Goldsbrough, P. B., Adam, Z., Tel-Or. 2000. Characterization and expression of a metallothionein gene in the aquatic fern *Azolla filiculoides* under heavy metal stress. *Planta* (223): 69-76

Sekarwati, N. 2014. Dampak logam berat Cu (Tembaga) dan Ag (Perak) pada limbah cair industri perak terhadap kualitas air sumur dan kesehatan masyarakat serta upaya pengendaliannya di Kotagede Yogyakarta. *Tesis.* Universitas Negeri Surakarta. Surakarta.

Siregar, U.J and Siregar, C.A. 2010. *Fitoremediasi : Prinsip dan Prakteknya dalam Restorasi Lahan Paska Tambang di Indonesia.* SEAMEO BIOTROP. Bogor. P:2

Skinner, K., Porter-Goff, E and Wright, N. 2007. Mercury uptake and accumulation by four species of aquatic plants. *Environmental Pollution* 145 : 234-237

Stolz, E and Greger, M. 2002. Accumulation properties of As, Cd, Cu, Pb and Zn by four wetland plant species growing on submerged mine tailings. *Environmental Experimental Botany,* 47 (3): 271-280

Suharto. 2010. *Limbah kimia dalam Pencemaran Air dan Udara.* Andi publ. Yogyakarta

Susarla, S., Median,V.F., M.C.Cutcheon. 2002. Phytoremediation: an Ecological solution to organic contamination. *Ecol Eng* 18: 647-58

Timperley, M.H., Brooks, R.R and Peterson, P.J. 1973. The distribution of nickel, cooper, zinc, and iron in tree leaves. *J.Exp.Bot* (24): 889-895

Wang, W., X and P. S. Rainbow. 2006. Subcellular partioning and the prediction of cadmium toxicity to aquatic organism. *Environ.Chem* 3 :395-399

Wang, Y., J. Huang., and Y. Gao. 2014. Subcellular accumulation of different concentrations of Cadmium, Nickel, and Copper in Indian Mustard and application of a sigmoidal model. *Journal of Environmental Quality* 42:1142-1150.

Williams, L. E. And J. L. Hall. 2003. Transition Metals Transporters in Plants. *Journal of Experimental Botany* 54(393) 2601-2613

Wei, L and Shen, Z. 2008. Cooper Accumulation and Tolarance in *Chrysanthemum coronarium* L. and *Sorghum sudanense L. Arch Environ Contam Toxicol* 55:238-246

Welch, R.M. 1995. Micronutrient nutrition of plants. *Crit. Rev.Plant. Sci* (14) : 49-82

Wolfram, I., Friedrich, B., Eitinger, T. 1995. The *Alcaligenes eutrophus* protein HoXN mediates nickel transport in *Escherchia coli. J. Bacteriol* (177): 1840-1843

POTENSI KRISAN (Chrysanthemum morifolium Ramat.) SEBAGAI AGEN FITOREMEDIASI TANAH TERCEMAR LIMBAH
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Yap. C.K., A.Ismail., S.G. Tan and H. Omar. 2003. Accumulation, depuration and distribution of cadmium and zinc in the green-lipped mussel *Perna viridis* (Linnaeus) under laboratory conditions. *Hydrobiologica* 498:151-160

Yoon,J., Cao,X., Ma,L and Zhou,Q. 2006. Accumulation of Pb, Cu, and Zn in native plants growing on a contaminated Florida site. *Science of the Total Environment* 368: 456-464