

References

1. Abumaizar R.J., Kocher W. and Smith E.H., Biofiltration of BTEX contaminated air streams using compost-activated carbon filter media, *J. Hazard. Mater.* 60 (1998) 111-126.
2. Gutierrez-Acosta O.B., Arriaga S., Escobar-Barrios V.A., Casas-Flores S., and Almendarez-Camarillo A., Performance of innovative PU-foam and natural fiber-based composites for the biofiltration of a mixture of volatile organic compounds by a fungal biofilm, *J. Hazard. Mater.* 201–202 (2012) 202–208.
3. Acuna M.E., Villanueva C., Cardenas B., Christen P. and Revah S., The effect of nutrient concentration on biofilm formation on peat and gas phase toluene biodegradation under biofiltration conditions, *Process. Biochem.* 38(1) (2002) 7-13.
4. Amanullah M.D., Farooq S. and Viswanathan S., Modeling and simulation of a biofilter, *Ind. Eng. Chem. Res.* 38(1999) 2765–2774.
5. Auria R., Aycaguer A.C. and Devanny J.S., Influence of water content on degradation rates for ethanol in biofiltration, *Air & Waste Management Association* 48(1998) 65-70
6. Barona A., Elias A., Arias R., Cano I. and Gonzalez R. Biofilter response to gradual and sudden variations in operating conditions, *Biochem. Eng. J.* 22 (1)(2004) 25–31.
7. Bagherpour M.B., Nikazar M., Welander U., Bonakdarpour B. and Sanati M., Effects of irrigation and water content of packings on alpha-pinene vapours biofiltration performance, *Biochem. Eng. J.* 24(2005) 185–193.
8. Chan W.C. and Lu M.C., A new type synthetic filter material for biofilter: Poly vinyl alcohol/peat composite bead, *J. Appl. Polym. Sci.* 88(2003) 3248–3255.
9. Chan W.C. and Su M.Q. Biofiltration of ethyl acetate and amyl acetate using a composite bead biofilter, *Bioresour. Technol.* 99(17) (2008) 8016-8021.

10. Chan W.C. and Peng K.H., Biofiltration of ketone compounds by a composite bead Biofilter., *Bioresour. Technol.* 99(2008), 3029–3035.
11. Chan W. and Lai T., Interaction of compounds on biodegradation of ketone mixtures in a biofilter., *J. Chem. Technol. Biotechnol.*, 85(3)(2010)416-422.
12. Chan W.C. and Lin Z.Y., A process to prepare a synthetic filter material containing nutrients for biofiltration, *Bioresour. Technol.* 97(15)(2006) 1927–1933.
13. Darlington A.B., Dat J. and Dixon M.A., The biofiltration of indoor air: air flux and temperature influences on the removal of toluene, ethylbenzene and xylene, *Environ. Sci. Technol.* 35(2001) 240-246.
14. Dorado A.D., Baquerizo G., Maestre J.P., Gamisans X., Gabriel D. and Lafuente, J., modeling of a bacterial and fungal biofilter applied to toluene abatement: kinetic parameters estimation and model validation, *Chem. Eng. J.* 140(1–3) (2008)52–56.
15. Deshusses M.A. and Dunn I.J., Modeling experiments on the kinetics of mixed solvent removal from waste gas in a biofilter. *In Proceedings of the 6th European Congress on Biotechnology, Florence, 13-17 June.*
16. Devigny J.S., Duchesses M.A. and Webster T.S., Biofiltration of Air Pollution Control, *CRC Press. Boca Raton. FL, 1999.*
17. Delhomenie M.C., Bibeau L., Bredin N., Roy S., Broussau S., Brzezinski R., Kugelmass J.L. and Heitz M., Bio filtration of air contaminated with toluene on a compost-based bed. *Adv. Environ. Res.* 6 (3) 2002, 239-254.
18. Dehghanzadeh R., Torkian A., Bina B., Poormoghaddas H. and Ardashir K., Biodegradation of styrene laden waste gas stream using a compost-based biofilter, *Chemosphere.* 60 (2005) 434–439.

19. Delhomenie M.C. and Heitz M., Biofiltration of Air: A Review, Critical Review in Biotechnology, 25 (2005) 53-72.
20. Dorado A. D., Hernandez J., Ribera G., Gabriel D., Lafuente J. and Gamisans X. Evaluation of sludge-based carbon as packing material in biofiltration in comparison to classic materials, *Wat. Prac. Techno.* 4(2)(2009)1-4.
21. Elmrini H., Bredin N., Shareefdeen A. and Heitz M., Biofiltration of xylene emissions: bioreactor response to variations in the pollutant inlet concentration and gas flow rate, *Chem. Eng. J.* 100(2004) 149-158.
22. Fernandez A.V., Molina L.L., Pulido N.A. and Aroca G., Effects of gas flow rate, inlet concentration and temperature on the biofiltration of toluene vapors, *J. Environ. Manage.* 84 (2)(2007) 115-122.
23. Galera M.M., Cho E., Tuuguu E., Park S.J., Lee C. and Chung W.J., Effects of pollutant concentration ratio on the simultaneous removal of NH₃, H₂S and toluene gases using rock wool-compost biofilter, *J. Hazard. Mater.* 152(2), (2008) 624 -631.
24. Heitz M., Bibeau L., Kiared K., Leroux A., Brezezinski R. and Viel G. Biological purification of exhaust air containing toluene vapor in a filter-bed reactor, *Can. J. Chem. Eng.* 25(1997) 921-929.
25. Hers I. J., Atwater L. and Li R. Z., Evaluation of vadose zone BTX biodegradation, *J. Contam. Hydrol.* 46 (3-4) (2000) 233-264.
26. Hirai M., Ohtake M., Shoda M., Removal Kinetics of Hydrogen Sulfide, Methanethiol and Dimethyl Sulfide by Peat Biofilters, *J. Ferment. Bioeng.* 70(5) (1990) 334-339.

27. Hirai M., Kamamoto M., Yani M. and Shoda M., Comparison of the biological H₂S removal characteristics among four inorganic packing materials, *J. Biosci. Bioeng.* 91(4)(2001) 396–402.
28. Ho K. L., Chung Y.C., Lin Y.H. and Tseng C.P., Microbial populations analysis and field application of biofilter for the removal of volatile-sulfur compounds from swine wastewater treatment system, *J. Hazard. Mater.* 152 (2008) 580–588.
29. Jang J H., Hirai M. and Shoda M., Performance of a Styrene-Degrading Biofilter Inoculated with *Pseudomonas* sp. SR-5, *J. Biosci. Bioeng.* 100(03)(2005) 297–302
30. Jang J.H., Hirai M. and Shoda M., Enhancement of styrene removal efficiency in biofilter by mixed cultures of *Pseudomonas* sp. SR-5. *J. Biosci. Bioeng.* 102(1)(2006) 53–59.
31. Jin Y., Veiga M.C. and Kennes C., Effects of pH, CO₂, and flow pattern on the autotrophic degradation of hydrogen sulfide in a biotrickling filter. *Biotechnol. Bioeng.* 92 (4)(2006) 462–471.
32. Jorio H., Kiared K.; Brzezinski R.; Leroux A.; Viel G. and Heitz M. Treatment of Air Polluted with High Concentration of Toluene and Xylene in a Pilot-Scale Biofilter. *J. Chem. Biotechnol.* 73(1998), 183-196.
33. Kelly W.R., Hornberger G.M., Herman J.S. and Mills A.L., Kinetics of BTX biodegradation and mineralization in batch and column systems. *J. Contam. Hydrol.* 23 (1996), 113–132.
34. Kennes C. and Thalasso F., Waste gas biotreatment technology. *J. Chem. Technol. Biotechnol.* 72(1998) 303-319.

35. Kiared K., Bibeau and R. Brzezinski., Biological elimination of VOCs in biofilter. *Environ. Prog.* 15(1996)148-152.
36. Kinney K. A., Wright W., Chang D. P. and Schroeder E. D. (1998) Biodegradation of vapor phase contaminants. In *Bioremediation: Principles and Practice*, eds S. K. Sikdar and R. L. Irvine, Technomic Press, Lancaster, PA. 1(1998) 601–632.
37. Kim J.H., Rene E.R. and Park H.S., Performance of an immobilized cell biofilter for ammonia removal from contaminated air stream. *Chemosphere*. 68(2007) 274-280.
38. Leson G., Winer A.M., Biofiltration: an innovative air pollution control technology for VOC emissions. *J. Air Waste Manage. Assoc.* 41 (8)(1991) 1045–1054.
39. Liu Y., Quan X., Sun Y., Chen J., Xue D. & Chung J.S., Simultaneous removal of ethyl acetate and toluene in air streams using compost-based bio filters, *J Hazard. Mater.* 95 (1-2) (2002) 199–213.
40. Lim K.H., Treatment of waste-air containing ethanol and toluene in a biofilter. *Korean J. Chem. Eng.* 22(2): 228–233.
41. Lovanh N., Hunt C.S., Alvarez P.J.J., Effect of ethanol on BTEX biodegradation kinetics: aerobic continuous culture experiments. *Water Res.* 36(2002) 3739–3746.
42. Lu C., Che W., Lin M., Removal of BTEX vapor from waste gases by a trickle bed biofilter. *J. Air and Waste Manage. Assoc.* 50 (2000) 411–417.
43. Lu C., Chang K., Hsu S., A model for treating toluene and acetone mixtures by a trickle-bed air biofilter. *World J. Microbiol. Biotechnol.* 20 (2004) 185–192.

44. Mudliar S., Giri B., Padoley K., Satpute D., Dixit R., Bhatt P., Pandey R., Juwarkar A., Vaidya A. Bioreactors for treatment of VOCs and odours – A review, *J. Environ. Manage.* 91 (2010) 1039–1054.
45. Mathur A.K., Sundaramurthy J., Balomajumder C., Kinetics of the removal of monochlorobenzene vapour from waste gases using a trickle bed air biofilter, *J. Hazard Mater.* 137(2006), 1560–1568.
46. Mathur A. K., Majumder C.B. and Chatterjee S., Combined removal of BTEX in air stream by using mixture sugar cane bagasse, compost and GAC as biofilter media, *J. Hazard. Mater.*, 148(1-2) (2007) 64-74.
47. Mathur A. K. & Majumder C.B., Bio filtration and kinetic aspects of a biotrickling filter for the removal of paint solvent mixture laden air stream, *J. Hazard. Mater.*, 152 (2008) 1027–1036.
48. Matteau Y., Ramsay B., Thermophilic toluene biofiltration, *J. Air Waste Manage. Assoc.*, 49(1999) 350-354.
49. Maestre J.P., Gamisans X., Gabriel D. and Lafuente J., Fungal biofilters for toluene biofiltration: Evaluation of the performance with four packing materials under different operating conditions, *Chemosphere*, 67,(2007) 684-692.
50. Morales M., Auria R., Perez F. and Revah S., Toluene removal from airstream by biofiltration. In: Galindo E, Ramirez T. (editors). *Advances in Bioprocess Engineering*. (1994) 405–411.
51. Morlett-Chavez J. A., Ascacio-Martinez J. A., Rivas-Estilla A. M., Velazquez-Vadillo J. F., Haskins W. E., Barrera-Saldana H.A., and Acuna-Askar K., Kinetics of BTEX biodegradation by a microbial consortium acclimatized to unleaded gasoline and bacterial strains isolated from it, *Int. Biodeterior. Biodegradation*. 64 (2010) 581-587.

52. Morgenroth E., Schroeder E.D., Chang D.P.Y. and Scow K.M., Nutrient limitation in a compost biofilter degrading hexane, *J. Air Waste Manage. Assoc.*, 49(4) 1996 300-308.
53. Namkoong W., Park J.S. and VanderGhynst J.S., Biofiltration of gasoline vapor by compost media, *Environ. Pollut.* 2 (2003) 18-21.
54. Neal A.B. and Loehr R.C., Use of biofilters and suspended-growth reactors to treat VOCs, *Waste Manage.* 20 (2000) 59-68.
55. Okkerse W.J.H., Ottengraf S.P.P., Osinga-Kuipers B. and Okkerse M., Biomass accumulation and clogging in biotrickling filters for waste gas treatment. Evaluation of a dynamic model using dichloromethane as a model pollutant, *Biotechnol. Bioeng.* 63(4) (2000) 418-430.
56. Oh Y.S. & Choi S.C., Selection of suitable packing material for biofiltration of toluene, m- and p-xylene vapors, *J. Microbiol.* 38(2000) 31-35.
57. Ottengraf S.P.P. and van den Oever A.H.C., Kinetics of organic compound removal from waste gas with a biological filter, *Biotechnol. Bioeng.*, 25(1983) 3089-3102.
58. Park D.W., Kim S.S., Haam S., Ahn I.S. and Kim W.S., Biodegradation of toluene by a lab scale biofilter inoculated with *Pseudomonas putida* DK-1, *Environ. Technol.* 23 (3) (2002) 309-318.
59. Pedersen A.R. and Arvin E., Removal of toluene in waste gases using a biological trickling filter. *Biodegrad.*, 6(1995) 109-118.
60. Bing Q., Moe W. M. and Kinney K. A., Treatment of paint spray booth off-gases in a fungal biofilter. *J. Environ. Eng.* 131 (2)(2005) 180-189.

61. Qi, B. and Moe W.M., Performance of low-pH biofilters treating a paint solvent mixture: Continuous and intermittent loading, *J. Hazard. Mater.* 135(1-3)(2006), 303-310.
62. Raghuvanshi S., Babu B.V., Experimental studies and kinetic modeling for removal of methyl ethyl ketone using biofiltration, *Bioresour. Technol.* 100 (17)(2009) 3855–3861.
63. Ramirez-Saenz D., Zarate-Segura P.B., Guerrero-Barajas C., Garcia-Pena E.I., H₂S and volatile fatty acids elimination by biofiltration: clean-up process for biogas potential use. *J. Hazard. Mater.* 163(2009) 1272–1281.
64. Rene E. R., Murthy D.V.S. and Swami Nathan T., Performance evaluation of a compost bio filter treating toluene vapour, *Process. Biochem.* 40(2005) 2771-2779.
65. Rene E. R., Veiga M .C. and Kennes C., Biodegradation of gas-phase styrene using the fungus *Sporothrix varicibatus*: Impact of pollutant load and transient operation, *Chemosphere.* 79(2010)221–227.
66. Saravanan V. and Rajamohan N., Treatment of xylene polluted air using press mud based biofilter, *J. Hazard. Mater.* 162(2009) 981–988.
67. Schonduve P., Sara M. and Friedl A., Influence of physiological relevant parameters on biomass formation in a trickle-bed bioreactor used for waste gas cleaning. *Appl. Microbiol. Biotechnol.* 45(1996)286–292.
68. Shareefdeen Z., Baltzis B.C., Oh Y.S. and Bartha R., Biofiltration of methanol vapor. *Biotechnol. Bioeng.* 41(5)(1993)512-24.
69. Shareefdeen Z. and Baltzis B.C., Biofiltration of toluene vapor under steady-state and transient conditions: theory and experimental results., *Chem. Eng. Sci.* 49(24)(1994) 4347–4360.

70. Shukla A.K., Vishwakarma P., Upadhyay S.N., Tripathi A.K., Prasana H.C., Dubey S.K., Biodegradation of trichloroethylene (TCE) by methanotrophic community. *Bioresour. Technol.* 100(9)(2009)2469-74.
71. Singh K., Singh R.S., Rai B. N.&Upadhyay S.N., Biofiltration of toluene using wood charcoal as biofiltermedia, *Bioresour. Technol.* 101(2010)3947–3951.
72. Singh R.S., Agnihotri.S.S.&Upadhyay S .N., Removal of toluene vapour using agro-waste as biofiltermedia, *Bioresour. Technol.*, 97(18) (2006) 2296–2301.
73. Singh R. S., Rai B. N.&Upadhyay S.N., Removal of toluene vapour from air stream using a biofilter packed with polyurethane foam, *Process Saf. Environ.*, 88(2010) 366–371.
74. Smet E., Lens P. and Van Langenhove.H., Treatment of waste gases contaminated with odorous sulfur compounds. *Critical Reviews in Environmental Science and Technology*, 28(1998) 89-117.
75. Smith F.L., Sorial G.A, Suidan M.T., Breen A.W., Biswas P. and Brenner R.C., Development of two biomass control strategies for extended, stable operation of highly efficient biofilters with high toluene loadings. *Environ. Sci. Technol.* 30(1996)1744.
76. Sologar V.S., Lu Z. and Allen G., Biofiltration of concentrated mixtures of hydrogensulfide and methanol. *Environ. Prog.* 22(3) (2003) 129-136.
77. Steele J.A., Ozis F., Fuhrman J.A. and Devinnny J.S., Structure of Microbial communities in ethanol biofilters, *Chem. Eng. J.* 113(2-3)(2005)135-145.
78. Wani A.H., Lau A.K. and Branian R.M.R., Biofiltration Control of Pulping Odors H₂S: Performance, Macro Kinetics and Coexistence Effects of Organo-Sulfur Species. *J. chem. Technol. Biotechnol.*, 74 (1999) 9-16.

79. Wu D., Quan X., Zhang Y and Zhao Y., Long-term operation of a compost-based biofilter for biological removal of n-butyl acetate, p-xylene and ammonia gas from an air stream, *Biochem. Eng. J.* 32(02) (2006) 84-92.
80. Zilli M., Fabiano B., Ferraiolo A., Converti A., Macro-kinetic investigation on phenol uptake from air by biofiltration: Influence of superficial gas flow rate and inlet pollutant concentration. *Biotechnol. Bioeng.* 49 (1996) 391–398.
81. Zilli M., Palazzi E., Sene L., Converti A. and Borghi M.D., Toluene and styrene removal from air in biofilters, *Process. Biochem.*, 37(2001) 423-429.
