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Appendices

Appendix A

The volume reduction percentages of all composts (25types)

The cation exchange capacity (CEC) of all composts (25types)

The cation exchange capacity (CEC) of all composts (25types)

Table A.1 The volume reduction percentages of all composts (25types)

Compost kind (% MC/ initial pH)	Volume Reduction Percentage (%)
30/5	82.15
30/6	78.18
30/7	95.32
30/8	93.82
30/9	89.44
40/5	79.74
40/6	88.65
40/7	81.64
40/8	87.11
40/9	83.25
50/5	53.49
50/6	64.06
50/7	75.02
50/8	81.19
50/9	70.68
60/5	54.08
60/6	58.81
60/7	59.00
60/8	68.37
60/9	57.17
70/5	94.42
70/6	92.33
70/7	93.67
70/8	92.36
70/9	94.87

Table A.2 The cation exchange capacity (CEC) of all composts (25types)

Compost kind (% MC/ initial pH)	CEC (cmol/kg)
non-composted grass	11.4
30/5	22.5
30/6	22.1
30/7	22.8
30/8	25.0
30/9	19.6
40/5	13.9
40/6	15.8
40/7	17.0
40/8	16.0
40/9	17.5
50/5	15.2
50/6	16.1
50/7	16.0
50/8	16.5
50/9	16.4
60/5	12.3
60/6	15.3
60/7	14.2
60/8	18.6
60/9	16.0
70/5	16.0
70/6	15.1
70/7	15.6
70/8	17.5
70/9	17.5

Table A.3 The Freundlich coefficient values from the Freundlich model

Compost kind (% MC/ initial pH)	The Freundlich coefficient values (L/g)			
	Cd	Cu	Pb	Zn
non-composted grass	0.78	0.0010	1.40	0.14
30/5	7.97	7.36	3.44	4.96
30/6	7.95	8.62	5.40	5.16
30/7	8.16	6.21	8.64	5.36
30/8	9.20	4.82	4.43	6.42
30/9	8.24	5.10	5.20	5.96
40/5	4.98	8.73	10.90	3.78
40/6	5.91	8.97	18.09	6.02
40/7	7.01	10.18	11.64	7.06
40/8	7.14	7.11	24.87	7.73
40/9	7.69	2.30	4.17	8.79
50/5	5.08	6.45	6.33	5.24
50/6	5.80	14.05	16.64	6.26
50/7	5.04	10.03	37.57	5.24
50/8	7.16	10.73	17.72	6.56
50/9	7.10	0.16	4.56	7.35
60/5	4.80	4.60	22.71	4.59
60/6	4.71	7.43	43.28	4.54
60/7	5.30	6.64	12.90	5.14
60/8	6.12	6.03	6.33	6.45
60/9	3.77	0.61	2.45	6.38
70/5	4.72	6.07	20.82	4.57
70/6	5.41	9.69	26.09	5.51
70/7	7.05	7.87	15.54	7.42
70/8	5.48	1.34	3.75	8.08
70/9	6.97	1.31	4.23	8.38

Appendix B

The Cd Freundlich isotherm curves of the different condition composts

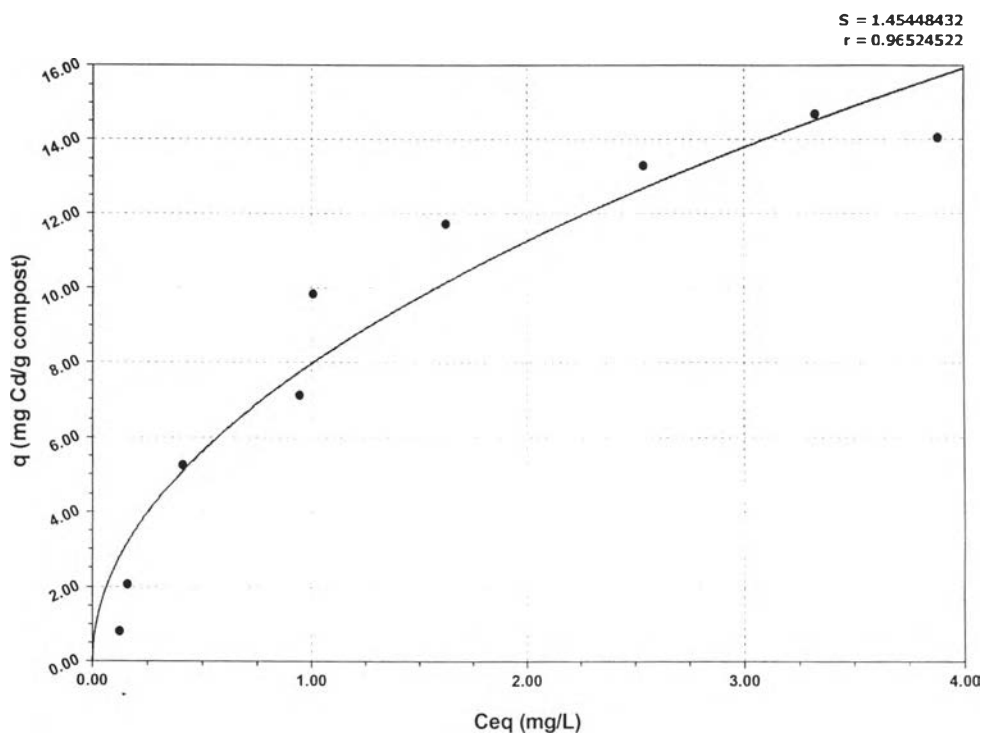


Figure B.1 The Cd Freundlich isotherm curve of the 30% MC/initial pH 5 compost

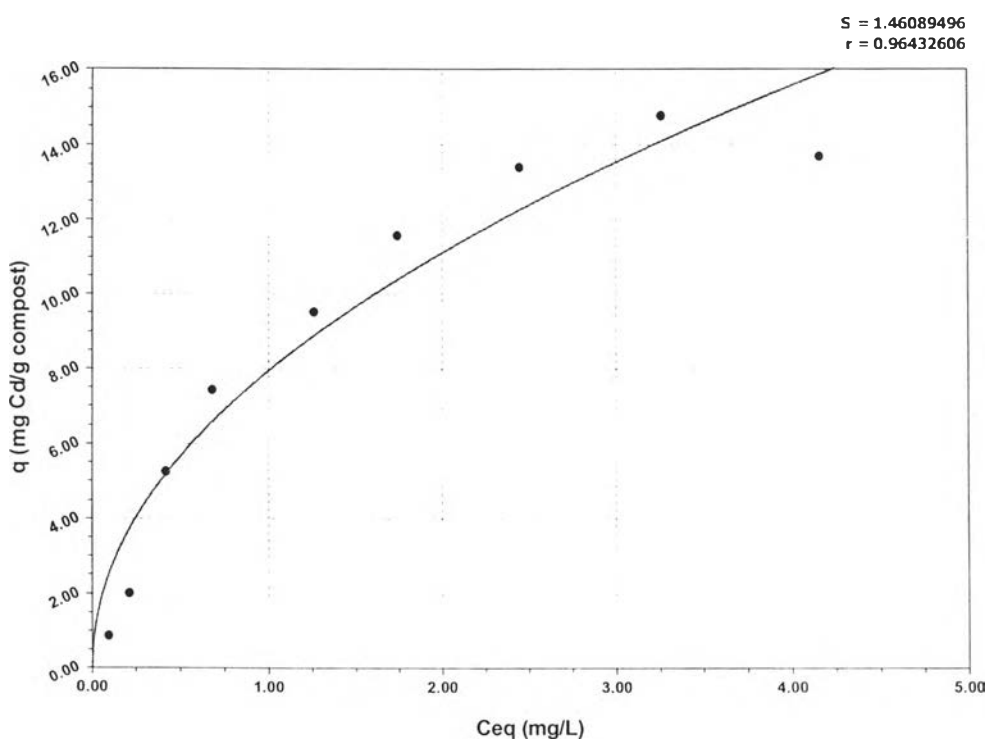


Figure B.2 The Cd Freundlich isotherm curve of the 30% MC/initial pH 6 compost

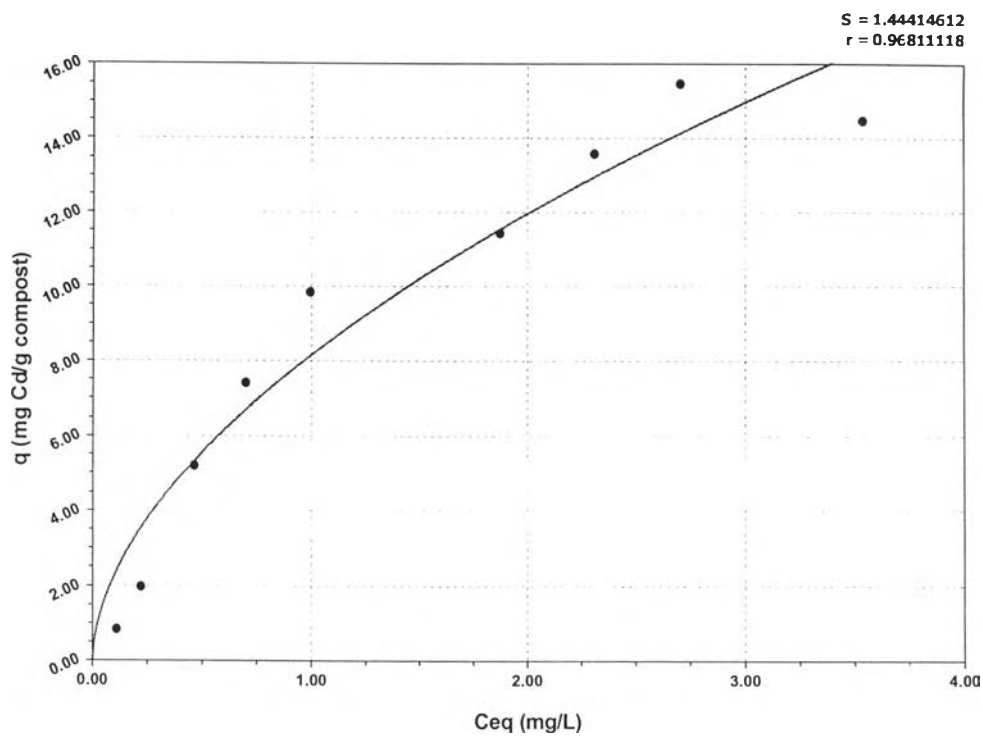


Figure B.3 The Cd Freundlich isotherm curve of the 30% MC/initial pH 7 compost

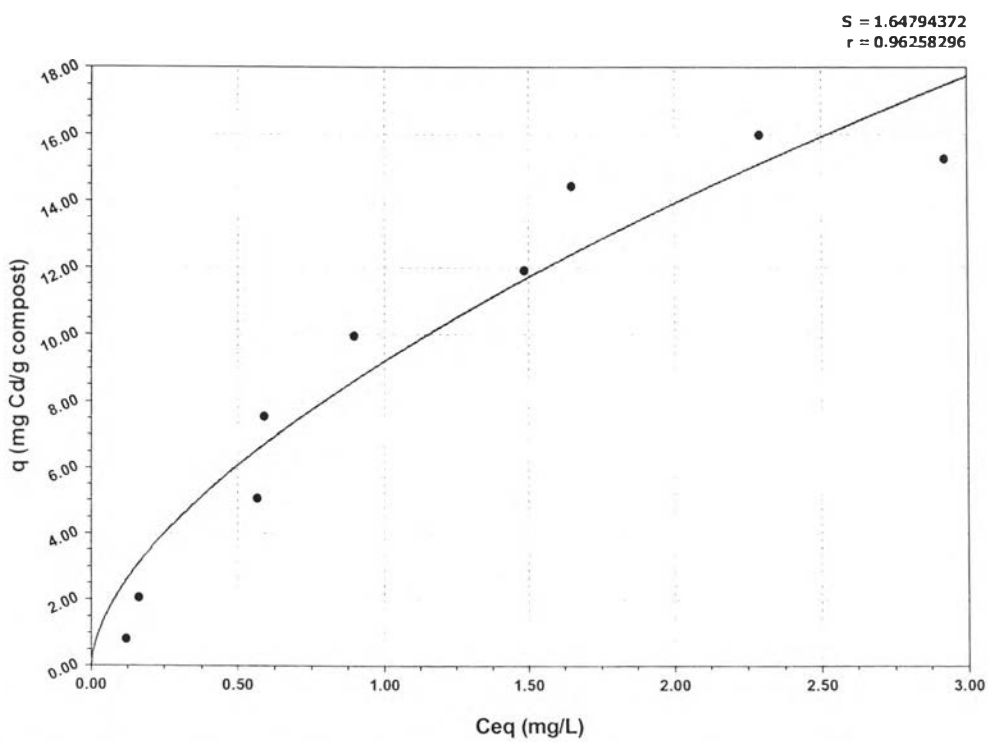


Figure B.4 The Cd Freundlich isotherm curve of the 30% MC/initial pH 8 compost

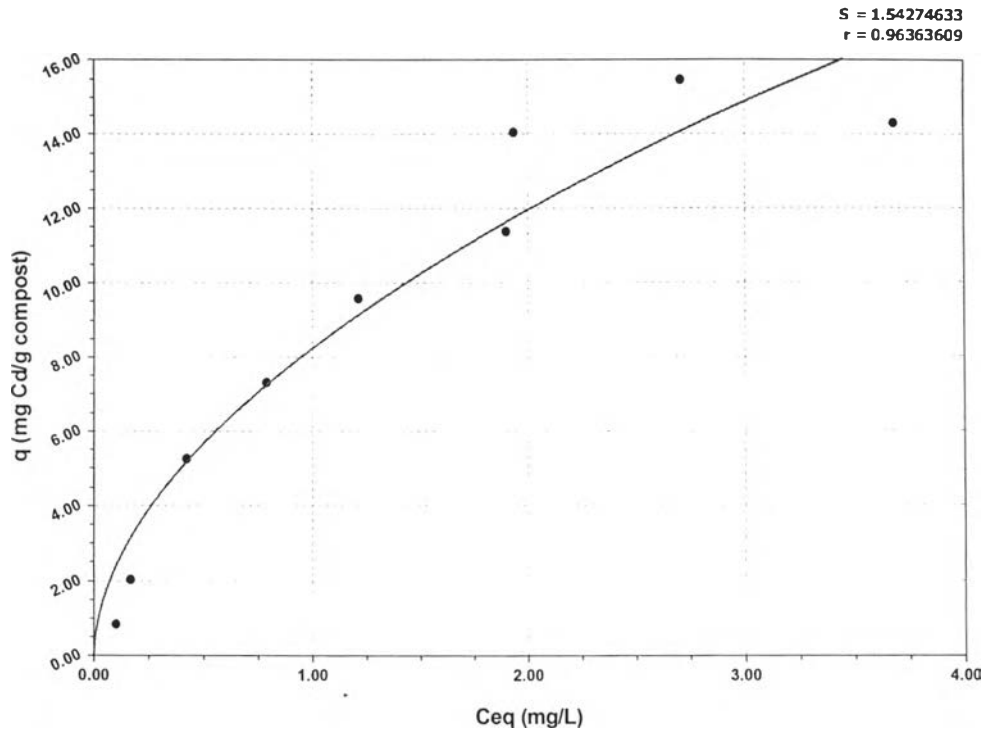


Figure B.5 The Cd Freundlich isotherm curve of the 30% MC/initial pH 9 compost

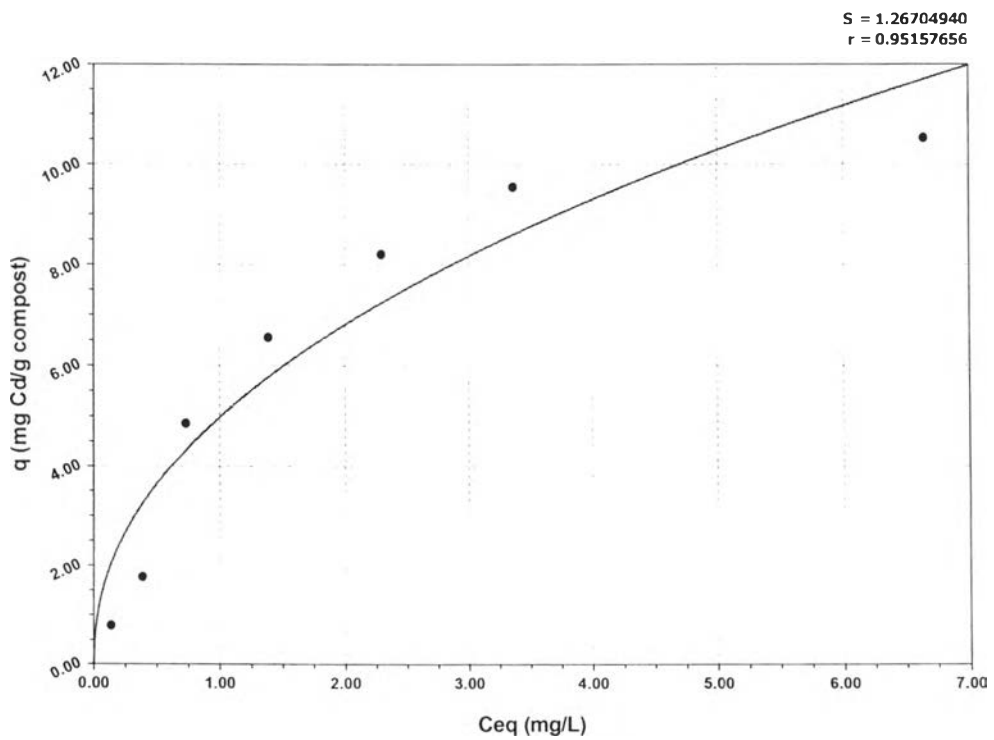


Figure B.6 The Cd Freundlich isotherm curve of the 40% MC/initial pH 5 compost

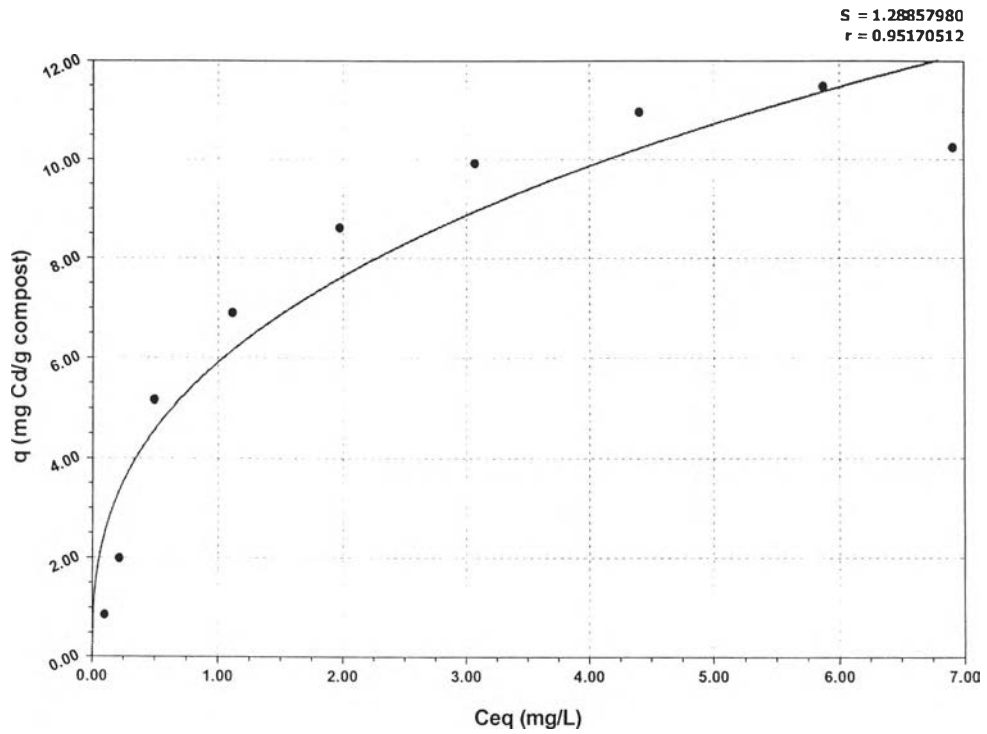


Figure B.7 The Cd Freundlich isotherm curve of the 40% MC/initial pH 6 compost

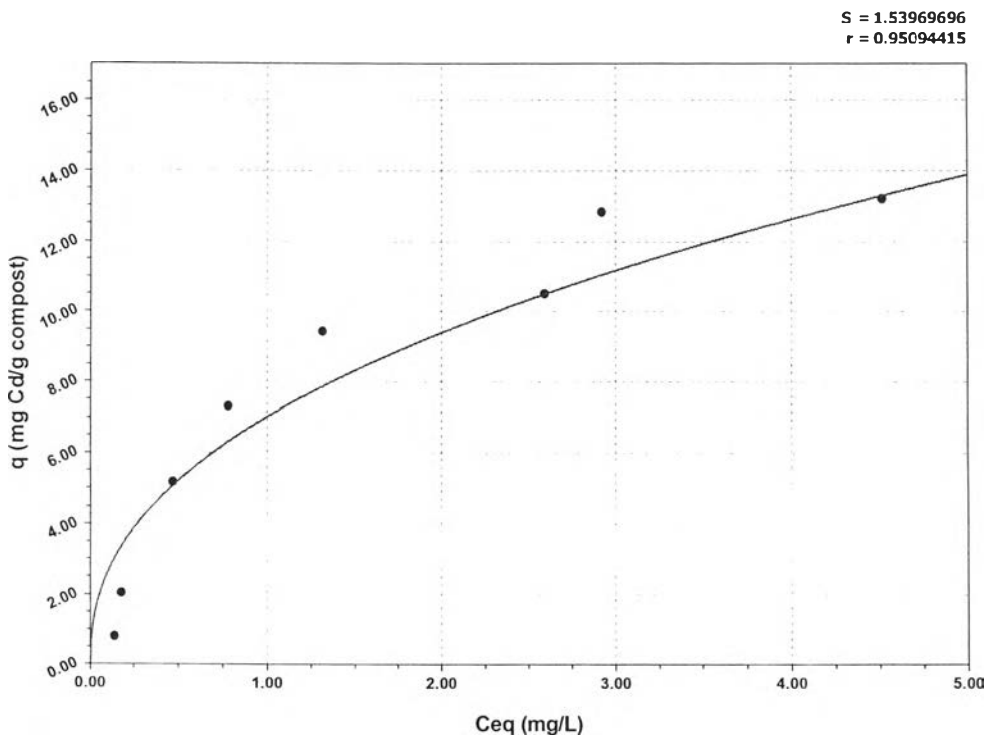


Figure B.8 The Cd Freundlich isotherm curve of the 40% MC/initial pH 7 compost

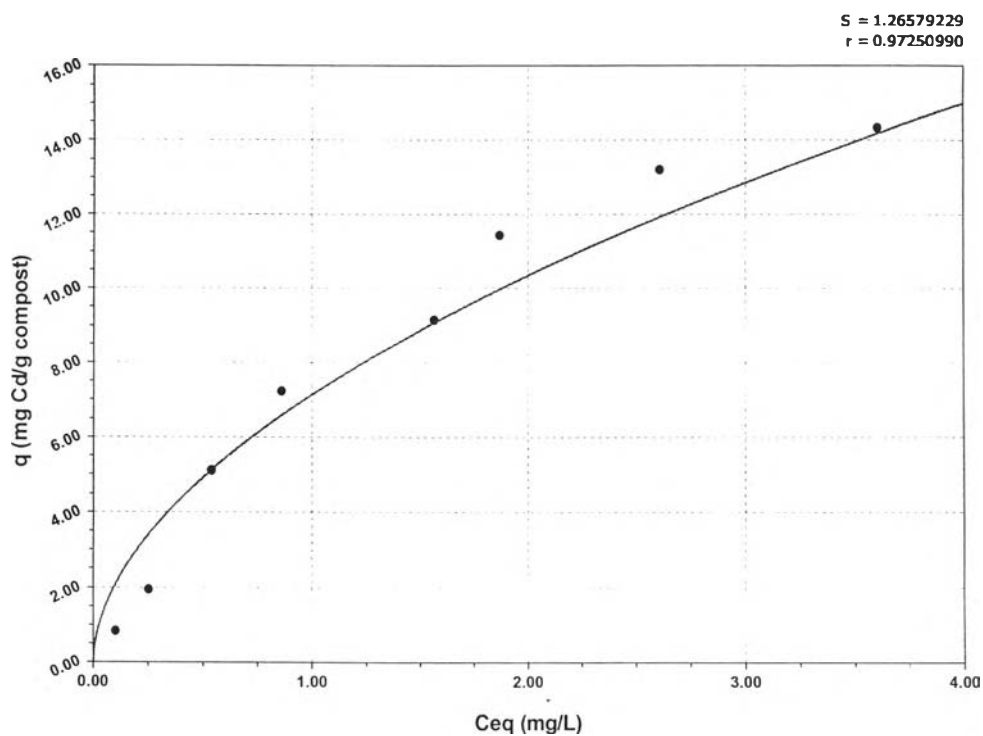


Figure B.9 The Cd Freundlich isotherm curve of the 40% MC/initial pH 8 compost

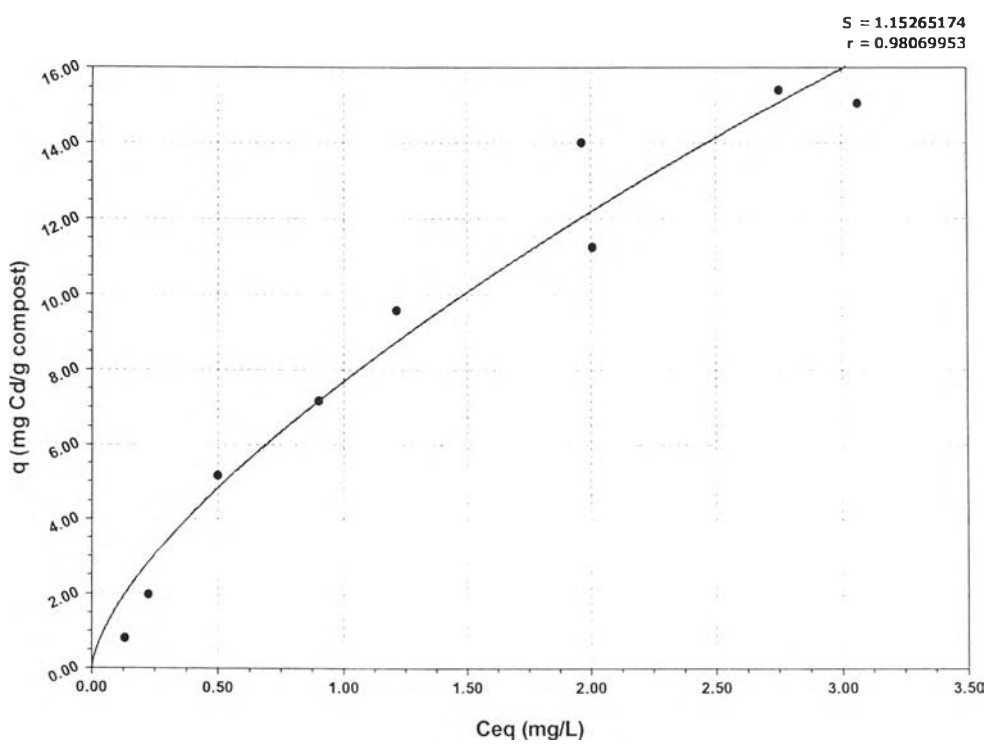


Figure B.10 The Cd Freundlich isotherm curve of the 40% MC/initial pH 9 compost

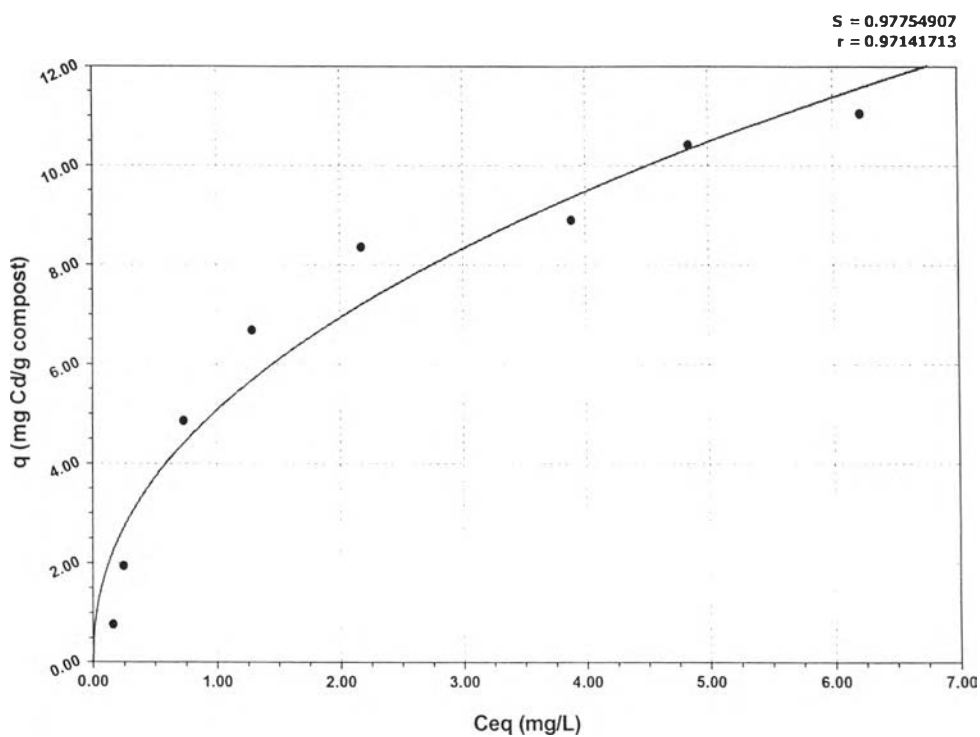


Figure B.11 The Cd Freundlich isotherm curve of the 50% MC/initial pH 5 compost

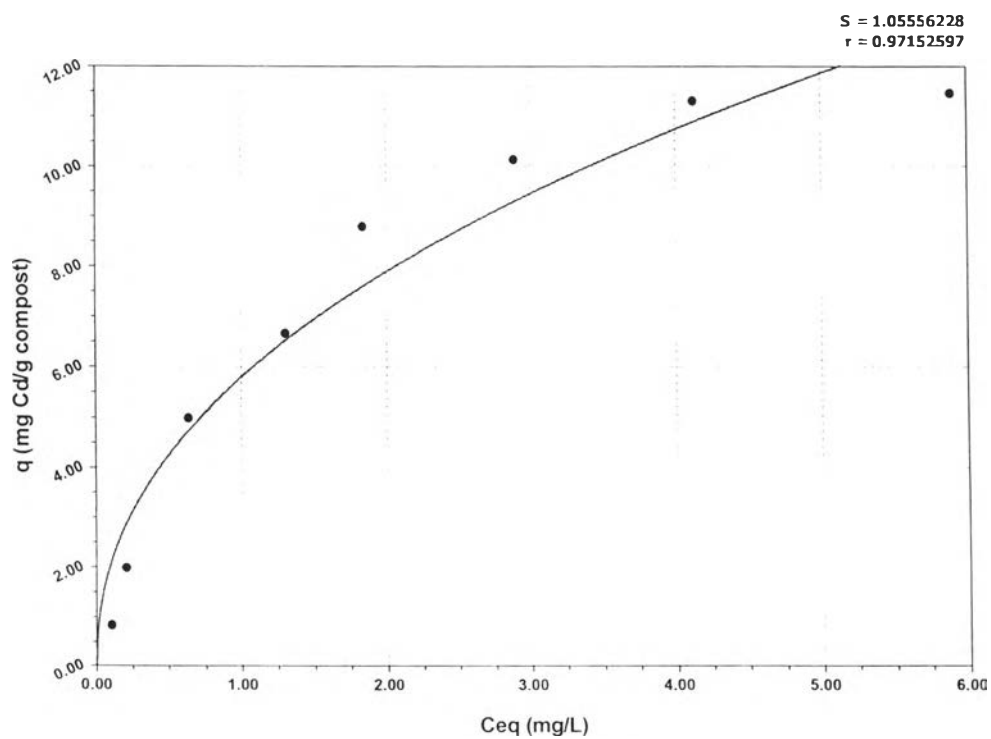


Figure B.12 The Cd Freundlich isotherm curve of the 50% MC/initial pH 6 compost

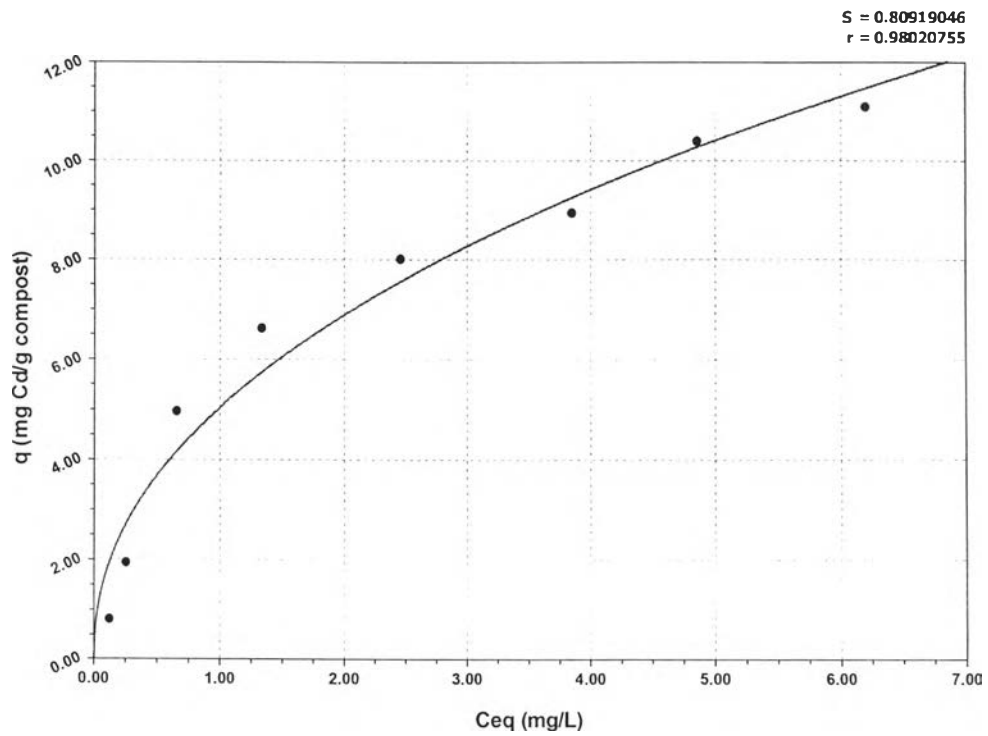


Figure B.13 The Cd Freundlich isotherm curve of the 50% MC/initial pH 7 compost

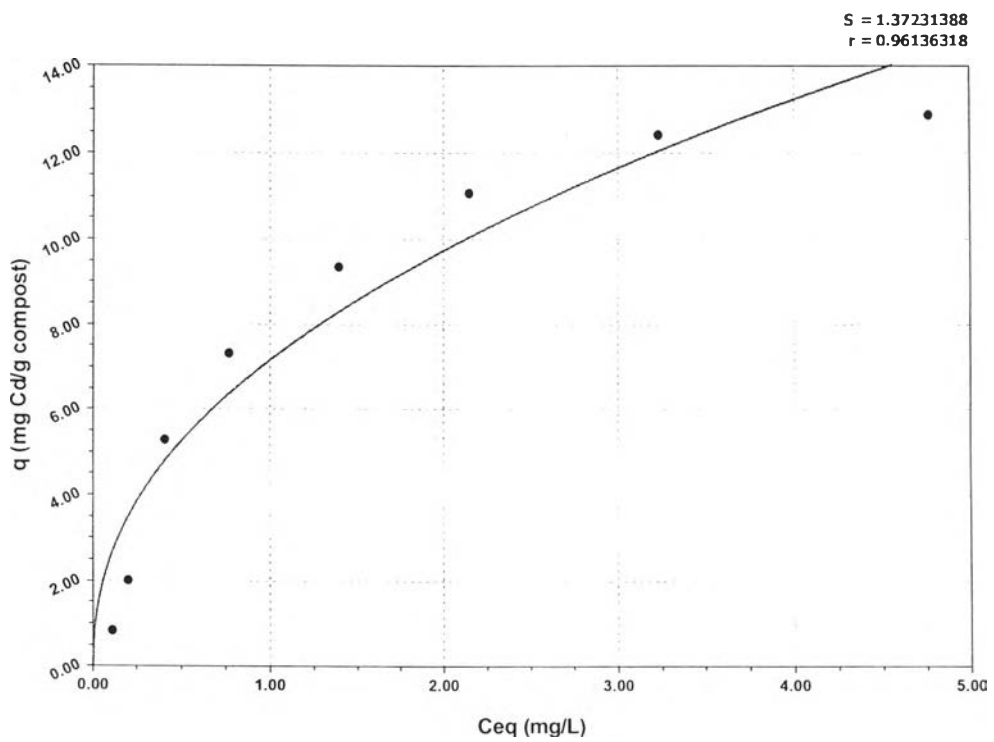


Figure B.14 The Cd Freundlich isotherm curve of the 50% MC/initial pH 8 compost

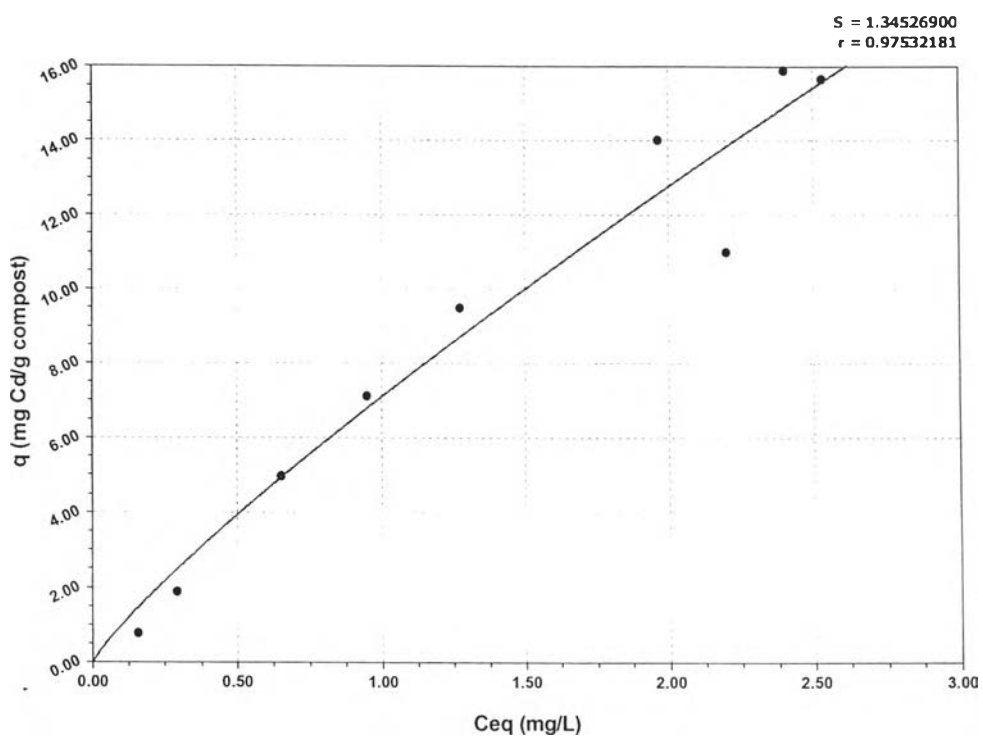


Figure B.15 The Cd Freundlich isotherm curve of the 50% MC/initial pH 9 compost

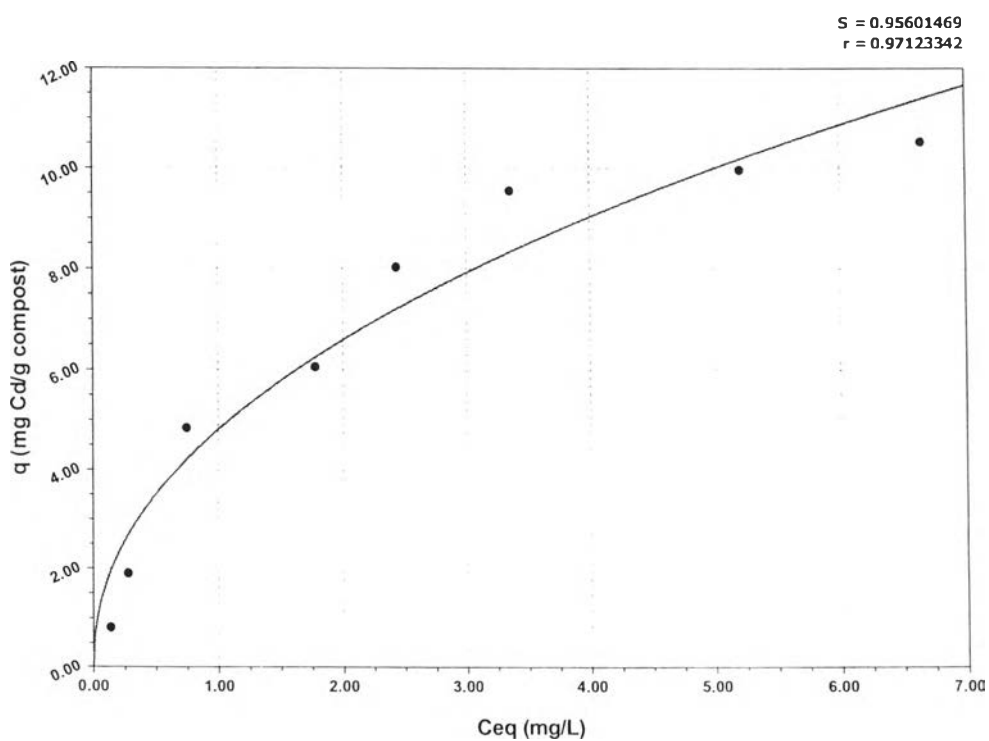


Figure B.16 The Cd Freundlich isotherm curve of the 60% MC/initial pH 5 compost

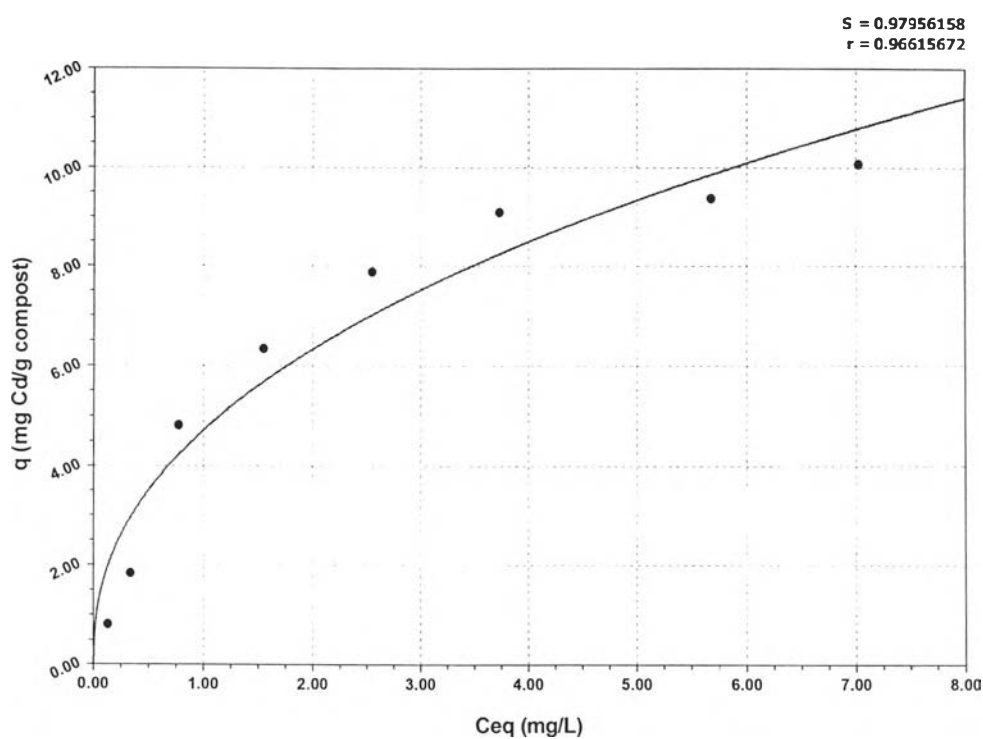


Figure B.17 The Cd Freundlich isotherm curve of the 60% MC/initial pH 6 compost

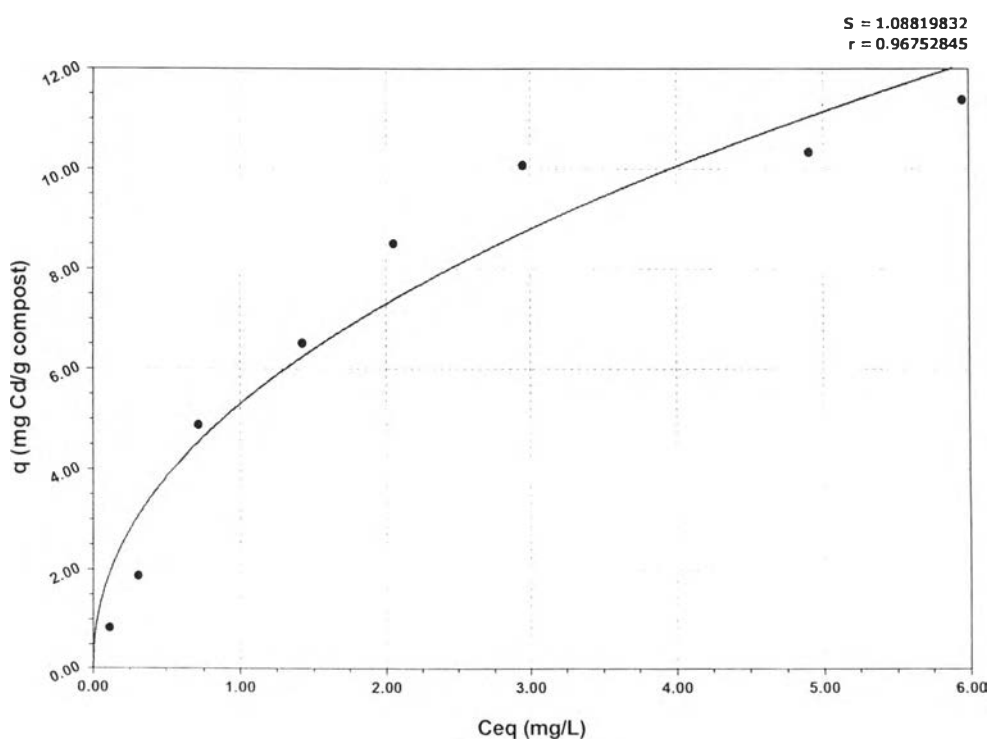


Figure B.18 The Cd Freundlich isotherm curve of the 60% MC/initial pH 7 compost

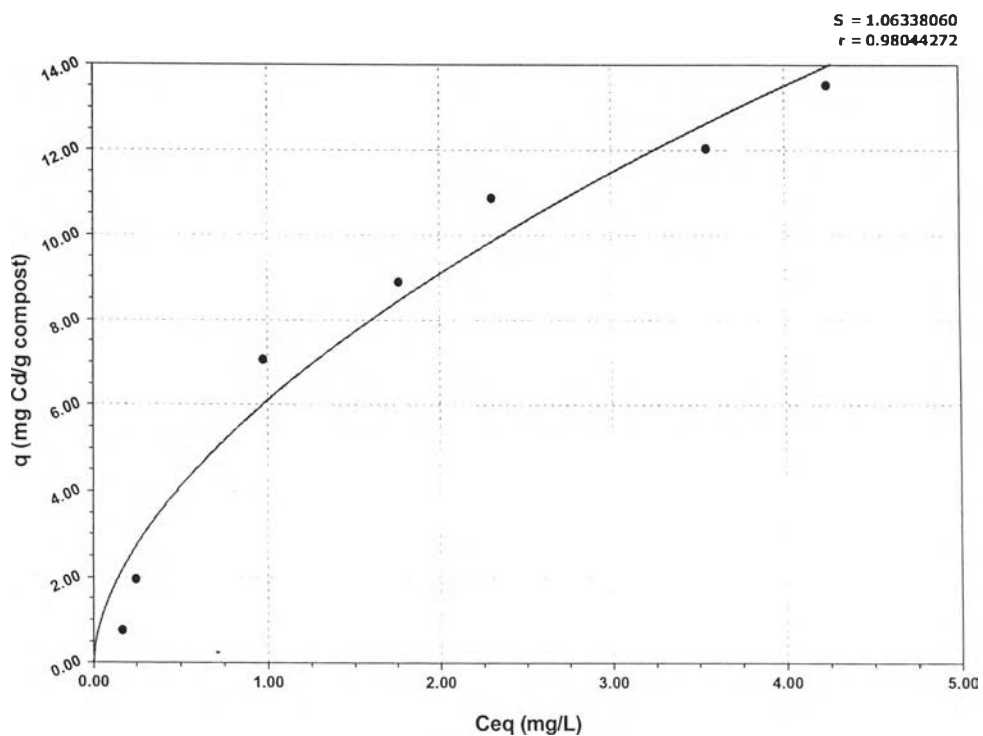


Figure B.19 The Cd Freundlich isotherm curve of the 60% MC/initial pH 8 compost

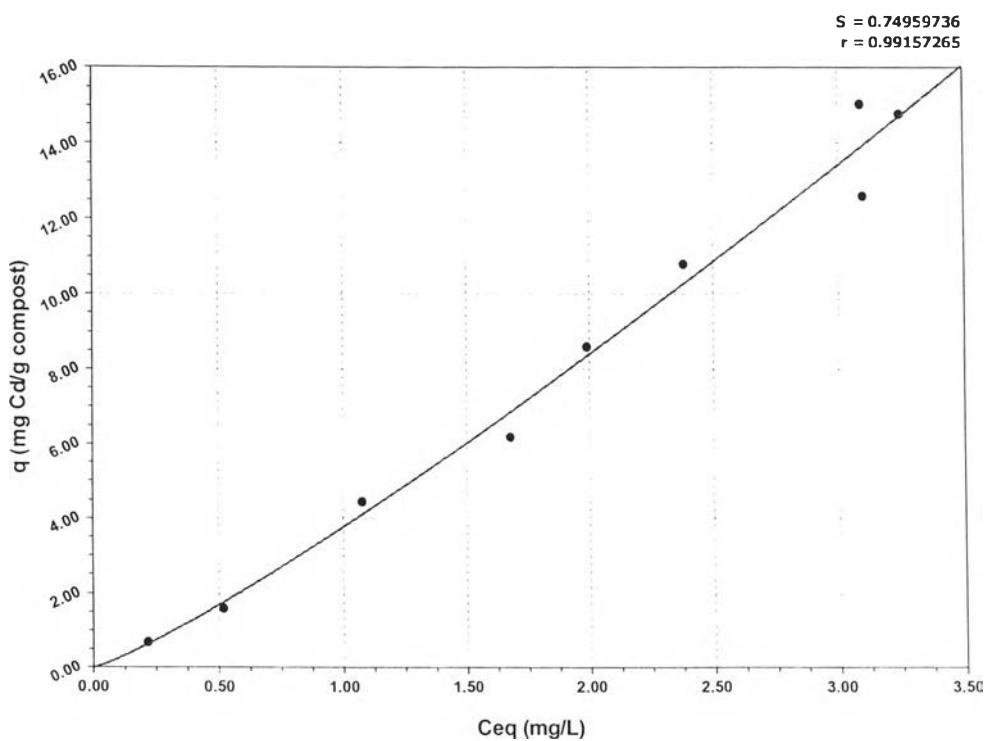


Figure B.20 The Cd Freundlich isotherm curve of the 60% MC/initial pH 9 compost

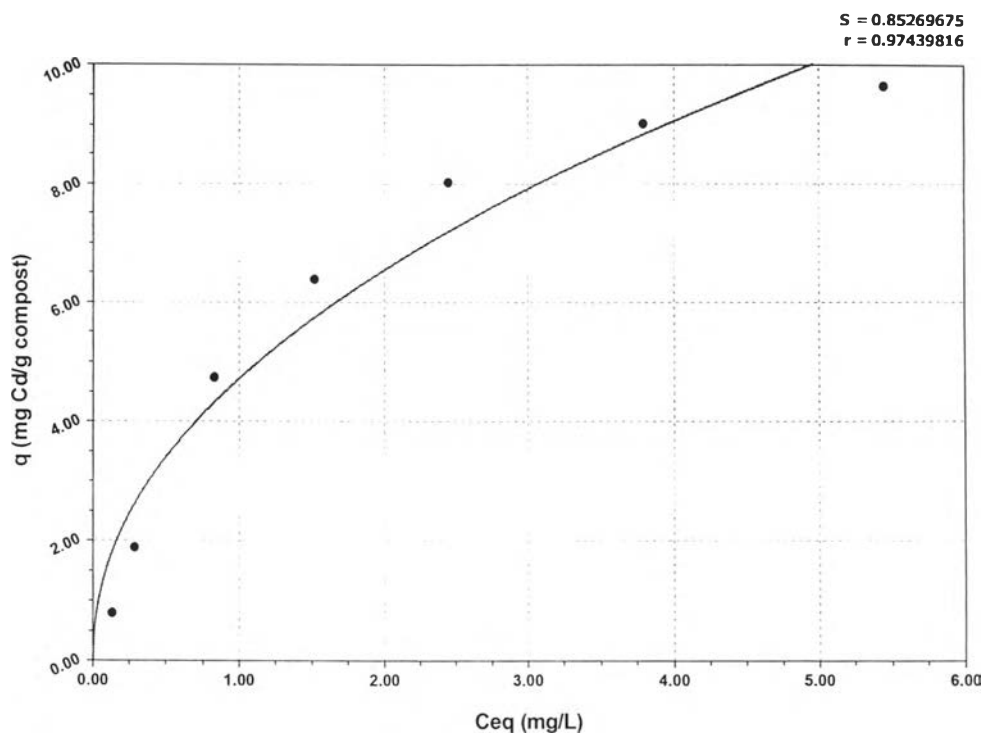


Figure B.21 The Cd Freundlich isotherm curve of the 70% MC/initial pH 5 compost

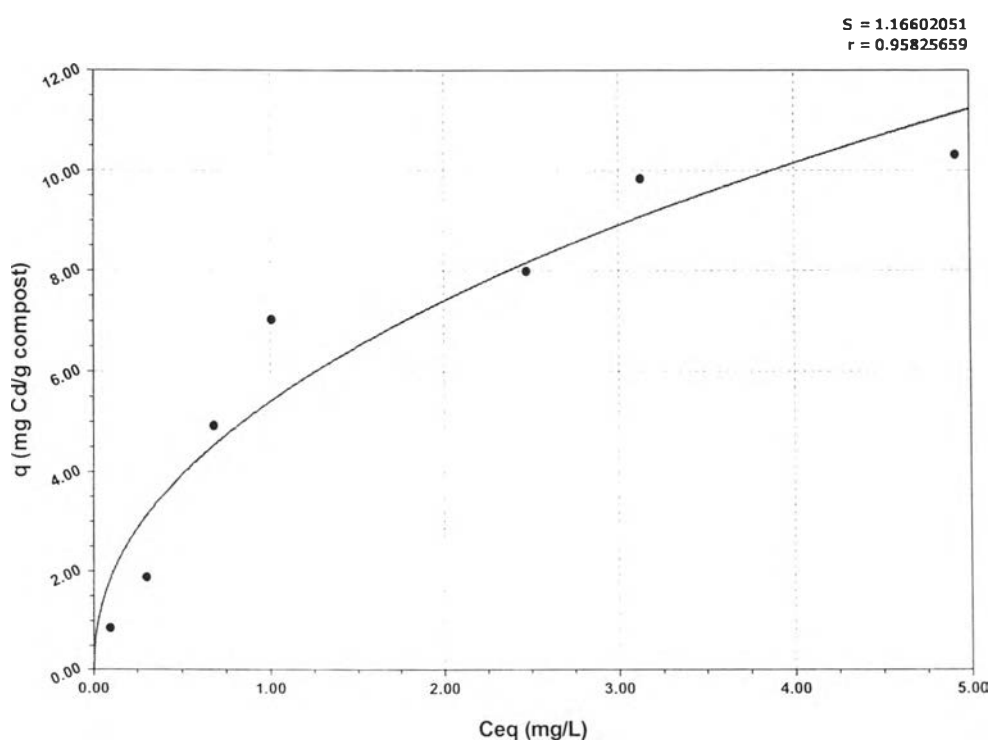


Figure B.22 The Cd Freundlich isotherm curve of the 70% MC/initial pH 6 compost

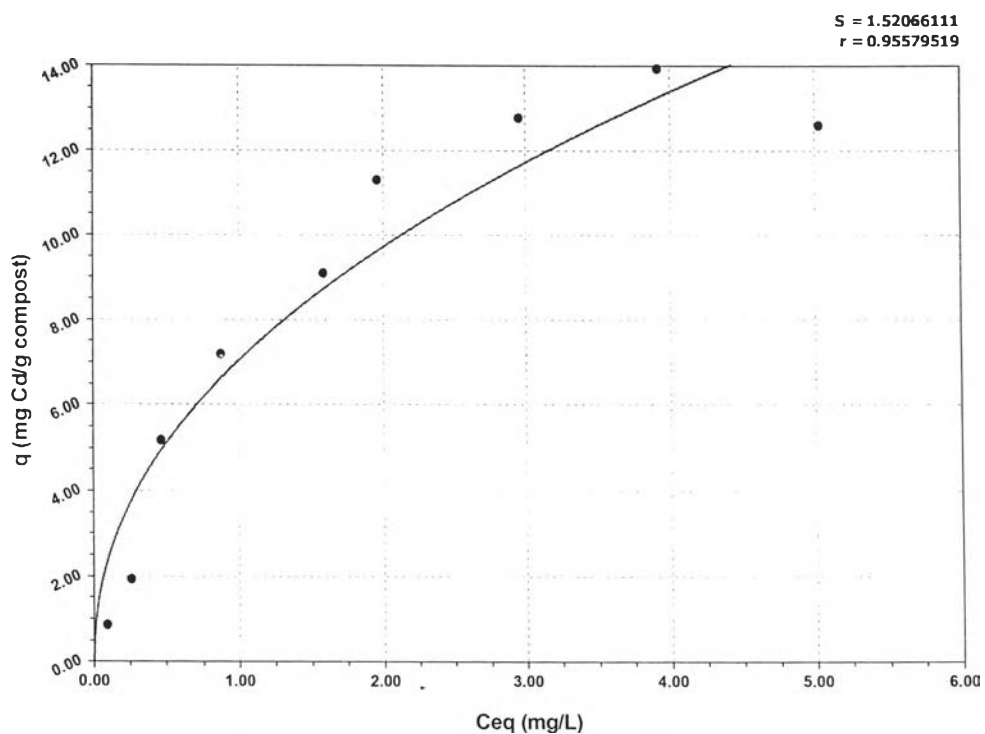


Figure B.23 The Cd Freundlich isotherm curve of the 70% MC/initial pH 7 compost

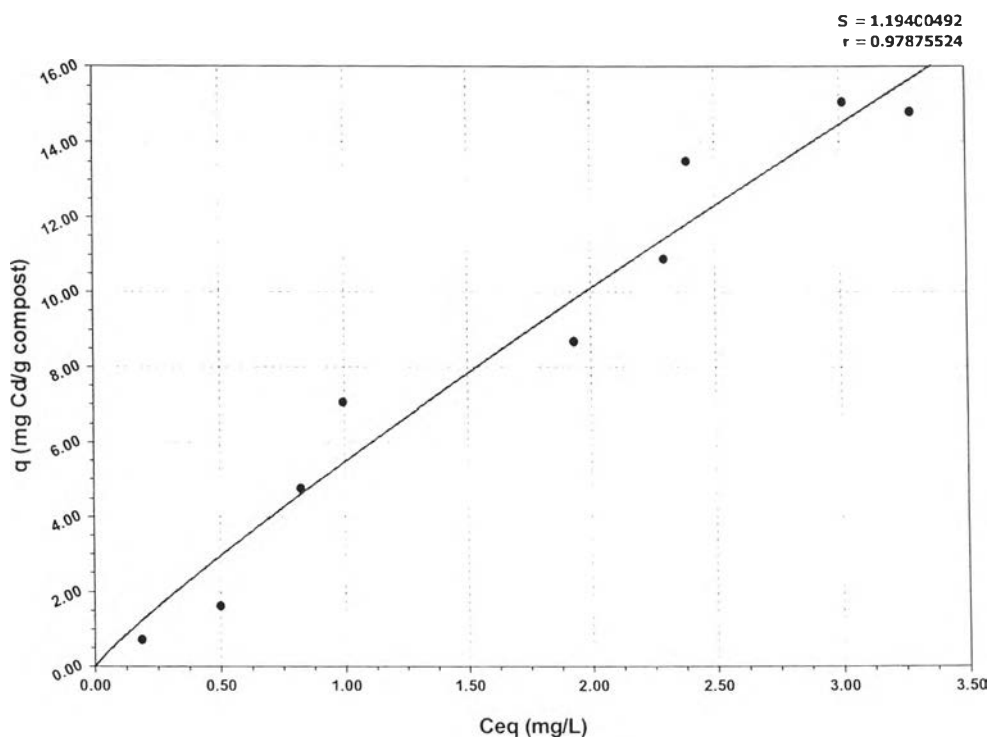


Figure B.24 The Cd Freundlich isotherm curve of the 70% MC/initial pH 8 compost

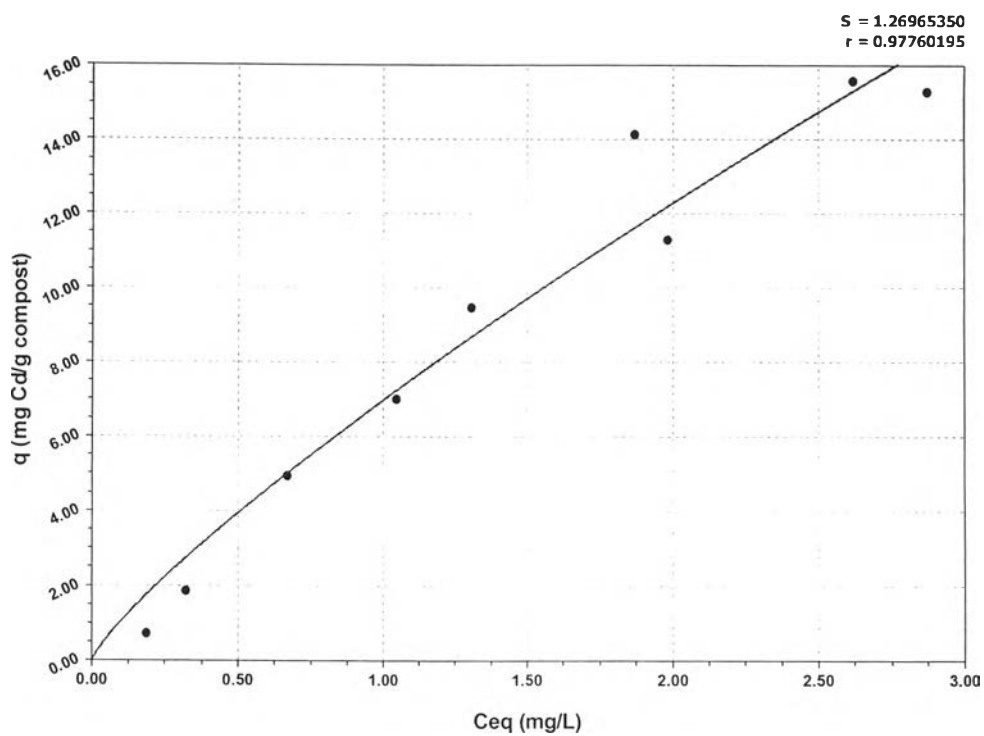


Figure B.25 The Cd Freundlich isotherm curve of the 70% MC/initial pH 9 compost

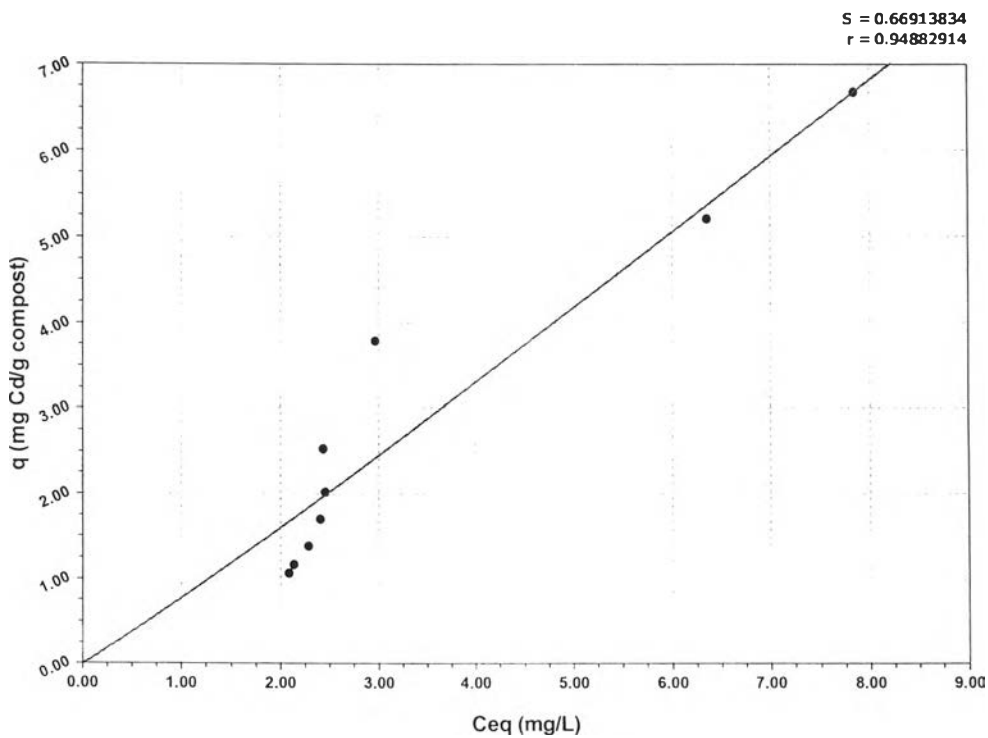


Figure B.26 The Cd Freundlich isotherm curve of the non-composted grass

Appendix C

The Cu Freundlich isotherm curves of the different condition composts

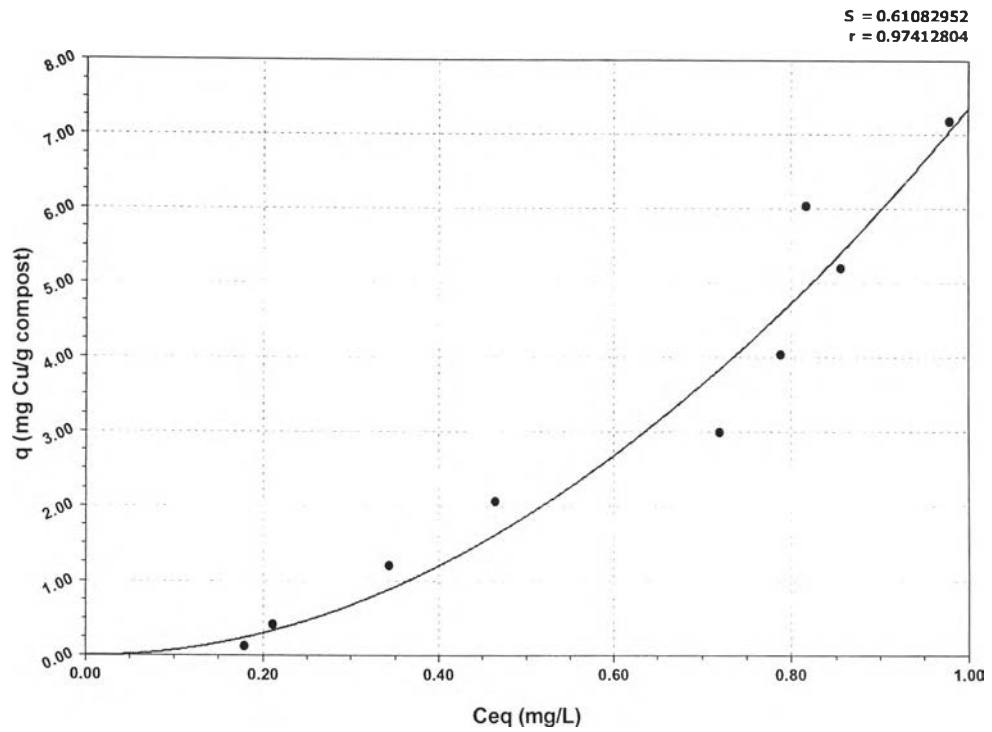


Figure C.1 The Cu Freundlich isotherm curve of the 30% MC/initial pH 5 compost

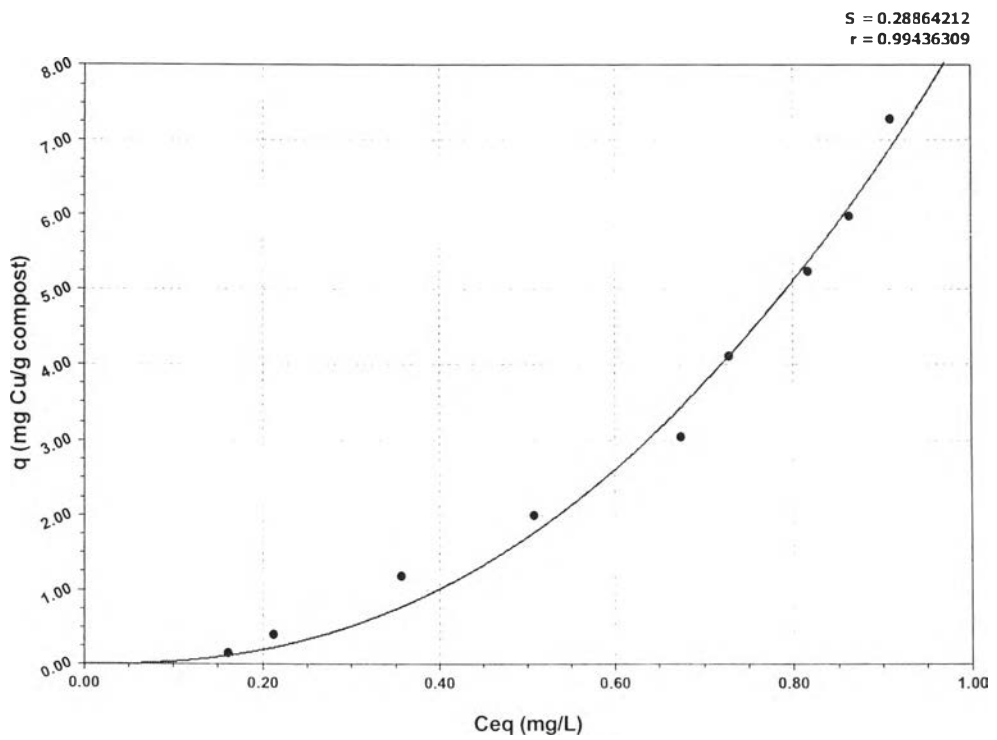


Figure C.2 The Cu Freundlich isotherm curve of the 30% MC/initial pH 6 compost

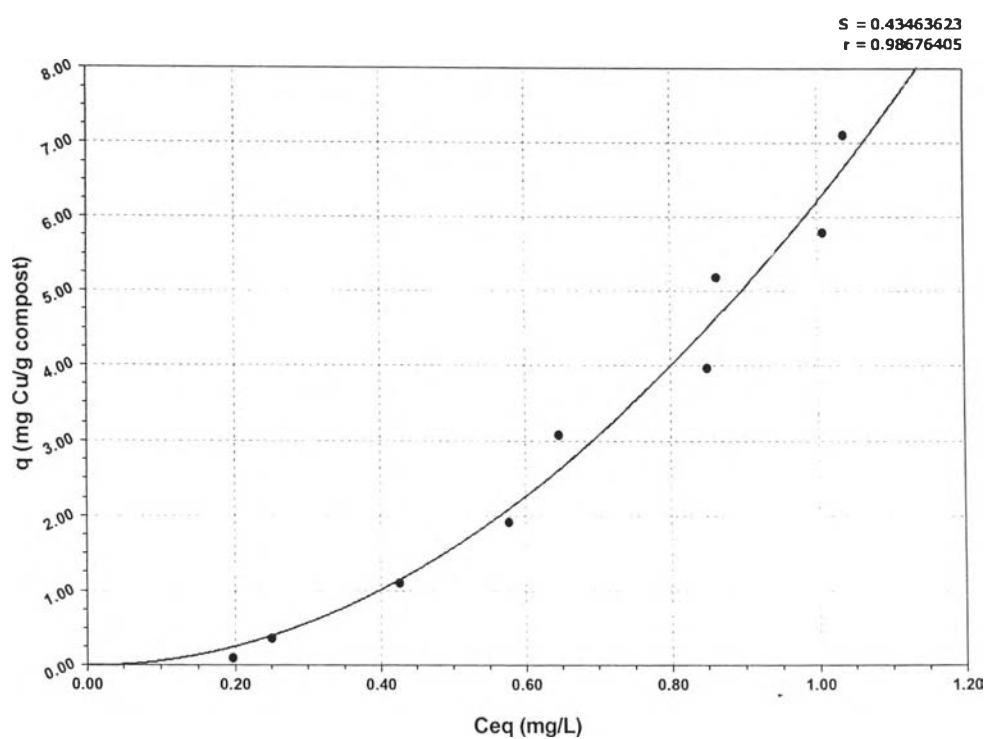


Figure C.3 The Cu Freundlich isotherm curve of the 30% MC/initial pH 5 compost

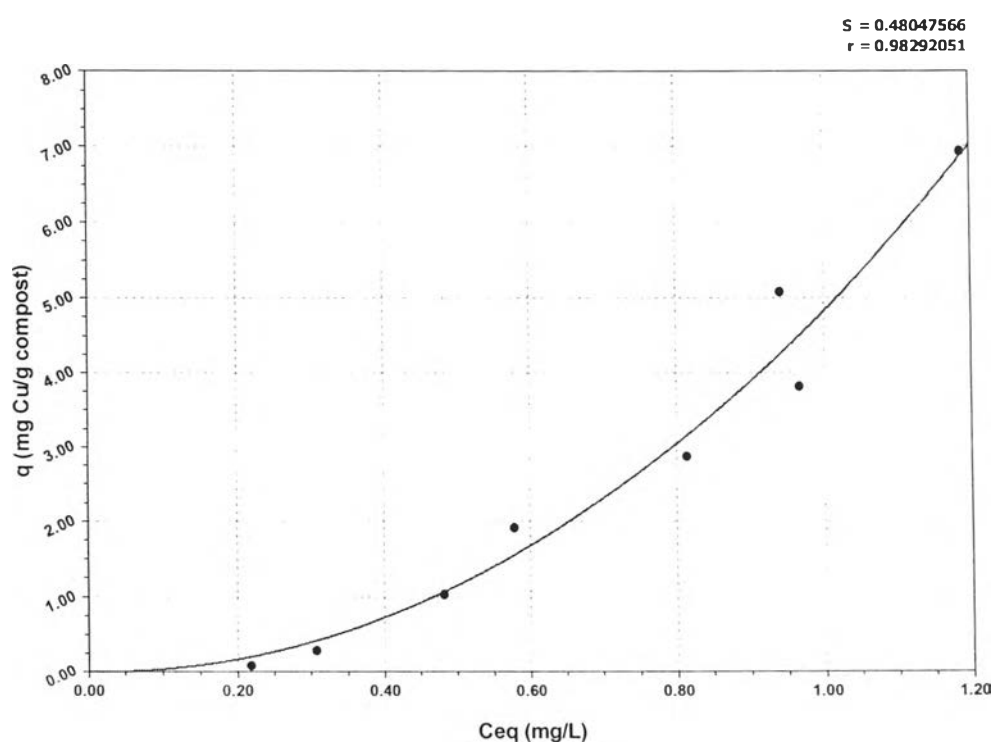


Figure C.4 The Cu Freundlich isotherm curve of the 30% MC/initial pH 8 compost

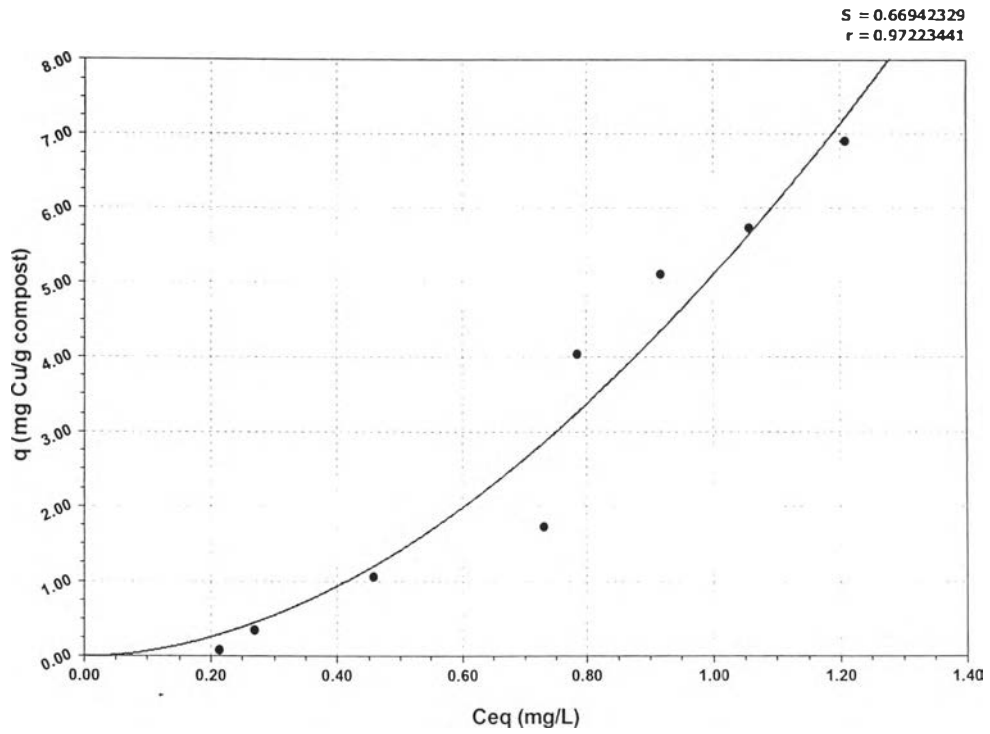


Figure C.5 The Cu Freundlich isotherm curve of the 30% MC/initial pH 9 compost

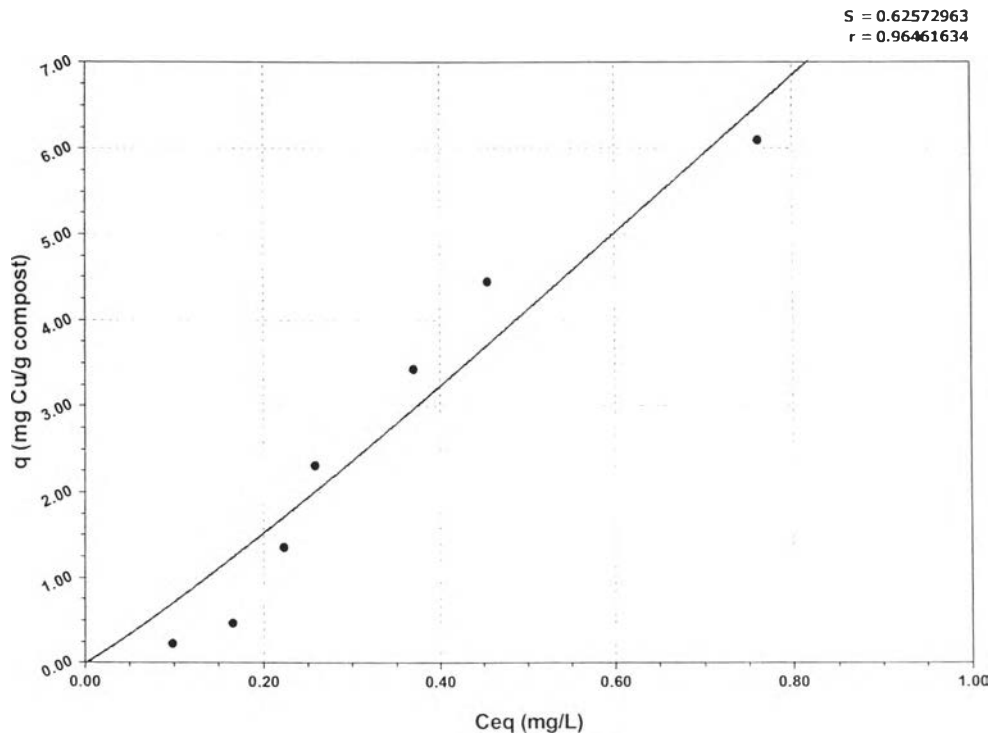


Figure C.6 The Cu Freundlich isotherm curve of the 40% MC/initial pH 5 compost

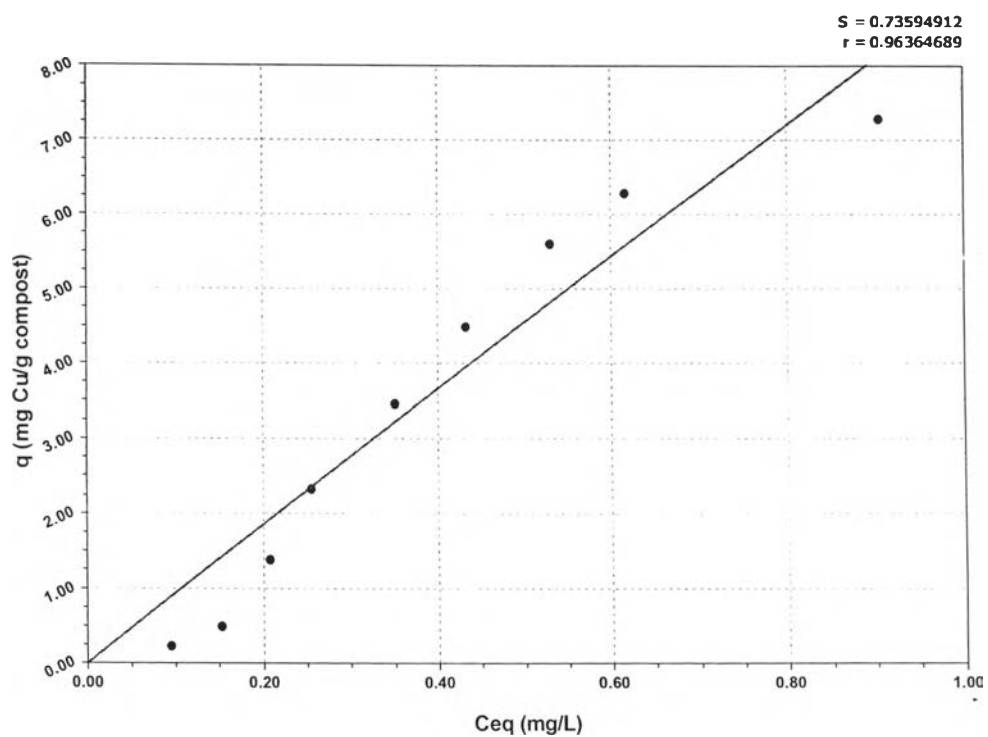


Figure C.7 The Cu Freundlich isotherm curve of the 40% MC/initial pH 6 compost

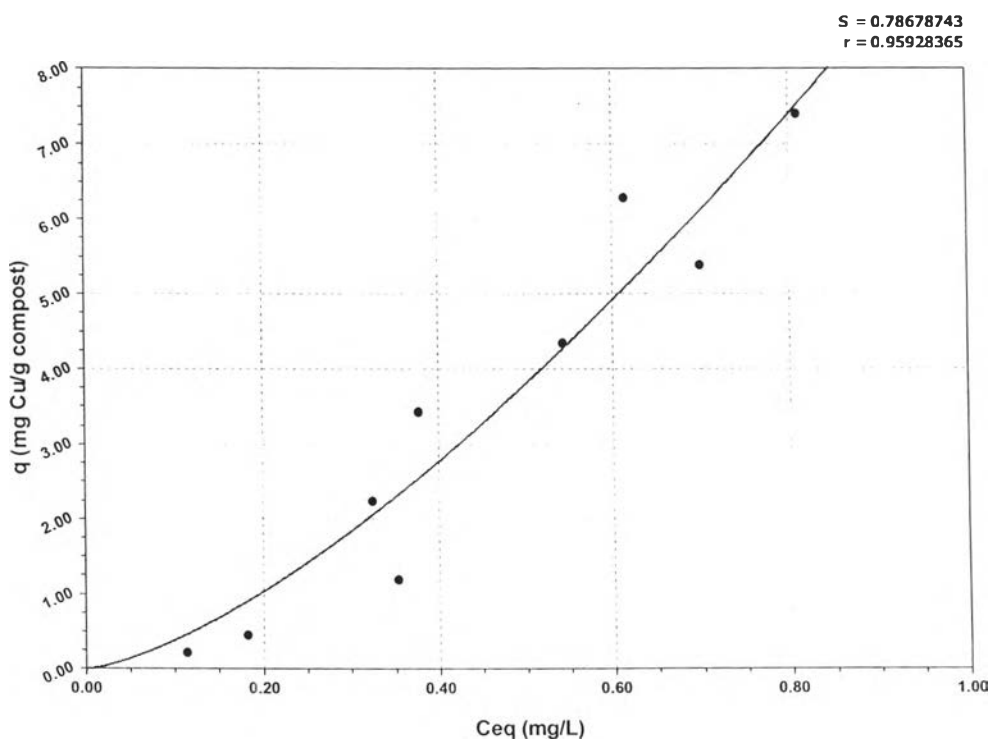


Figure C.8 The Cu Freundlich isotherm curve of the 40% MC/initial pH 7 compost

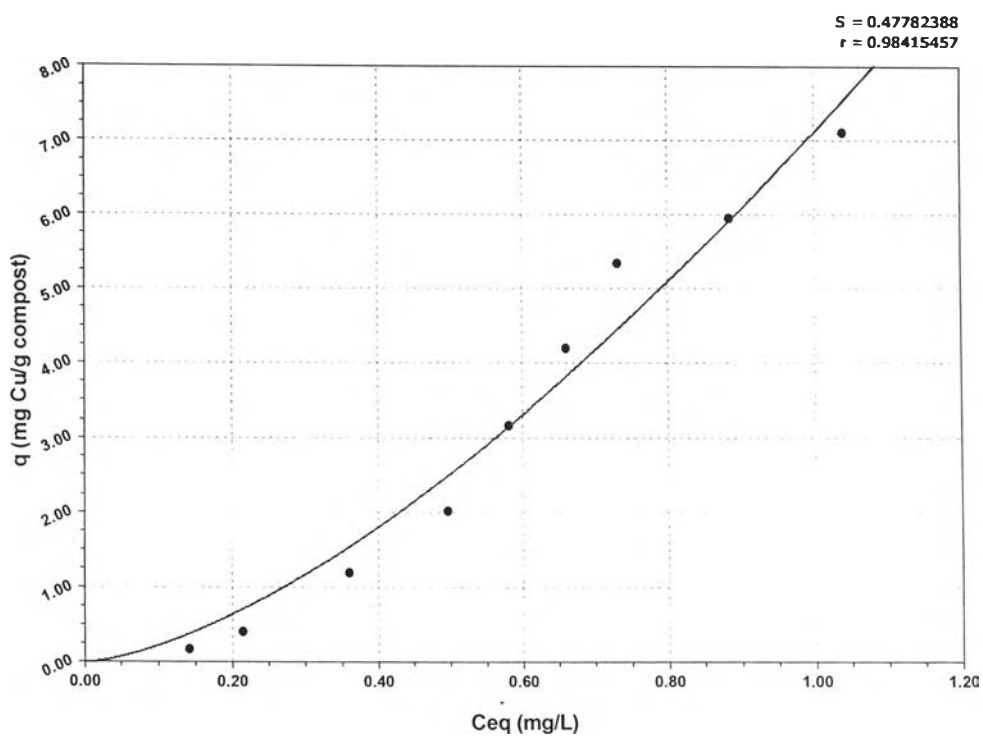


Figure C.9 The Cu Freundlich isotherm curve of the 40% MC/initial pH 8 compost

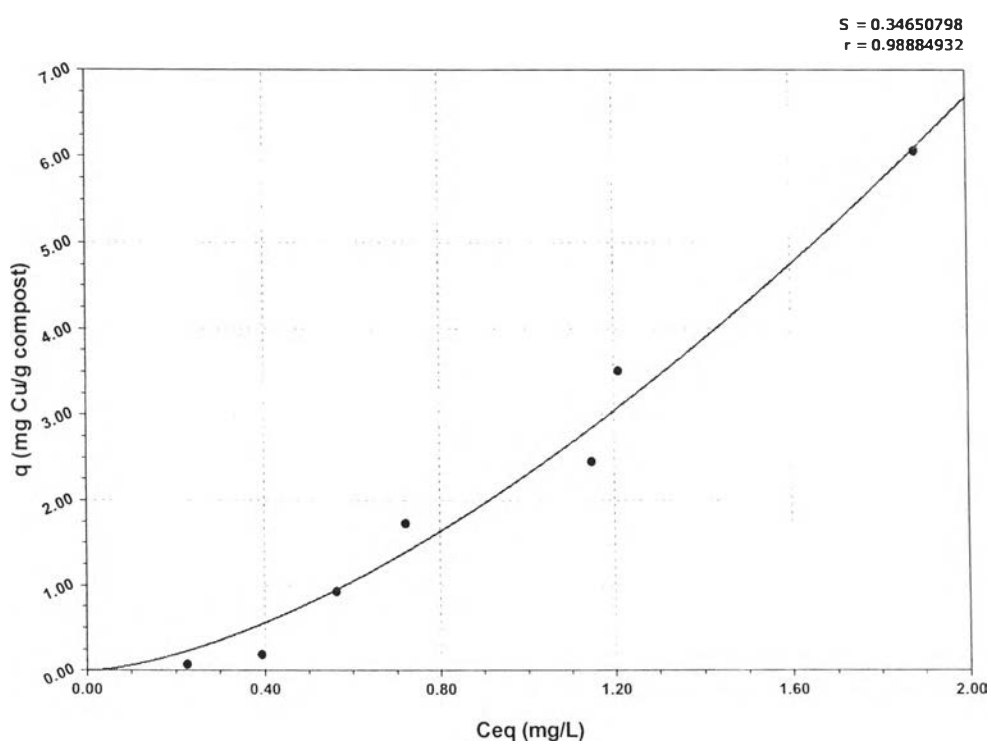


Figure C.10 The Cu Freundlich isotherm curve of the 40% MC/initial pH 9 compost

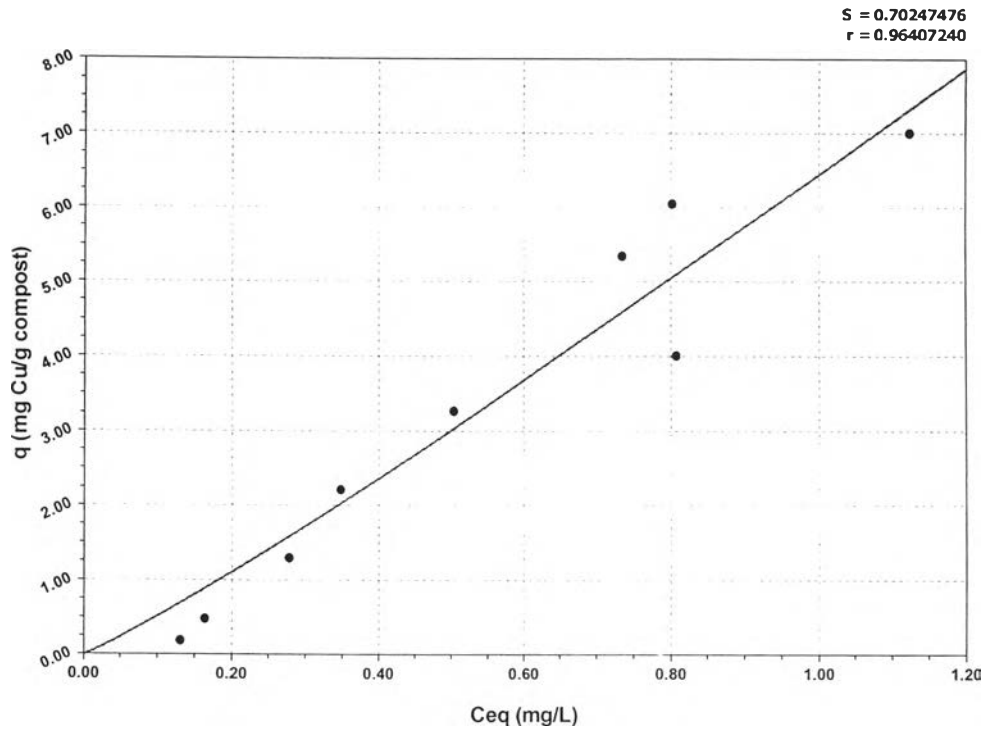


Figure C.11 The Cu Freundlich isotherm curve of the 50% MC/initial pH 5 compost

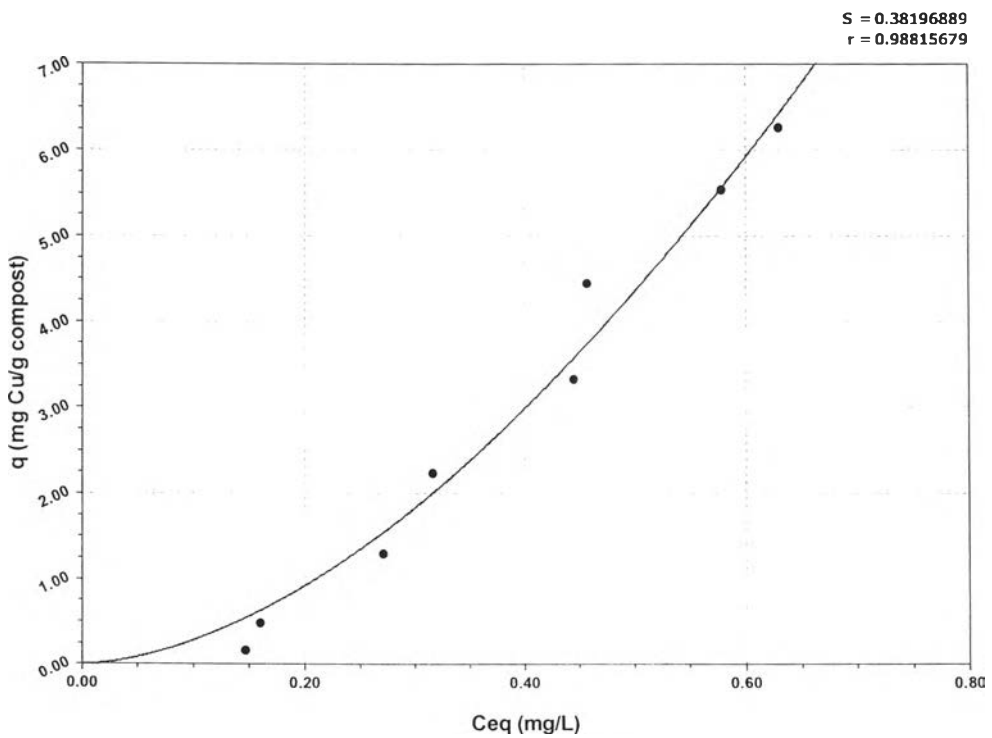


Figure C.12 The Cu Freundlich isotherm curve of the 50% MC/initial pH 6 compost

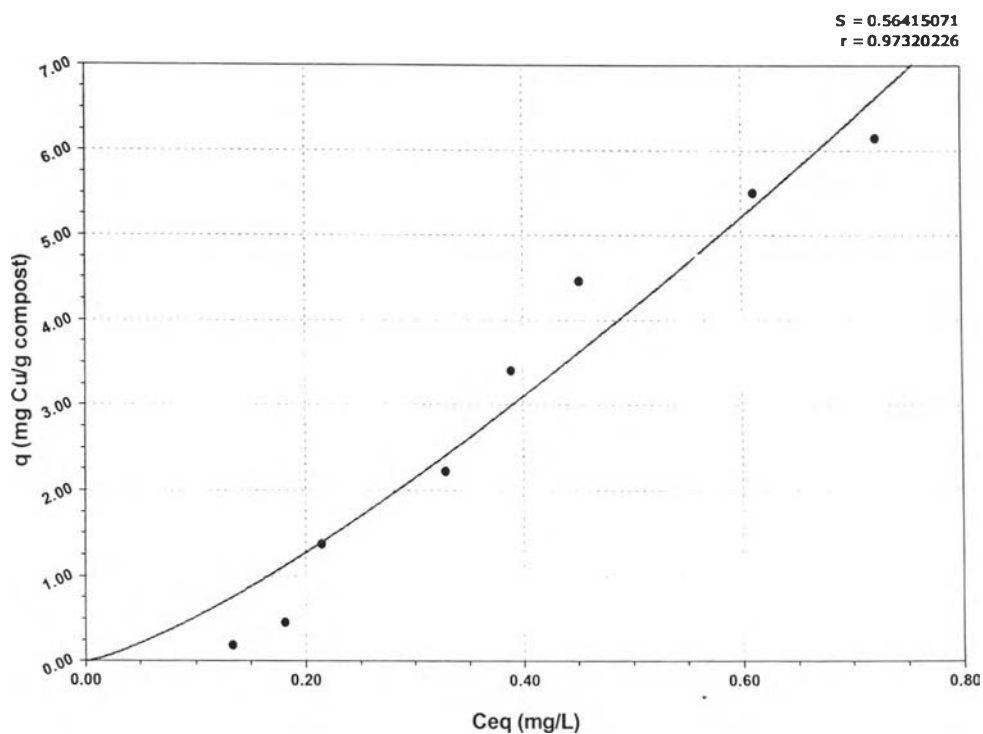


Figure C.13 The Cu Freundlich isotherm curve of the 50% MC/initial pH 7 compost

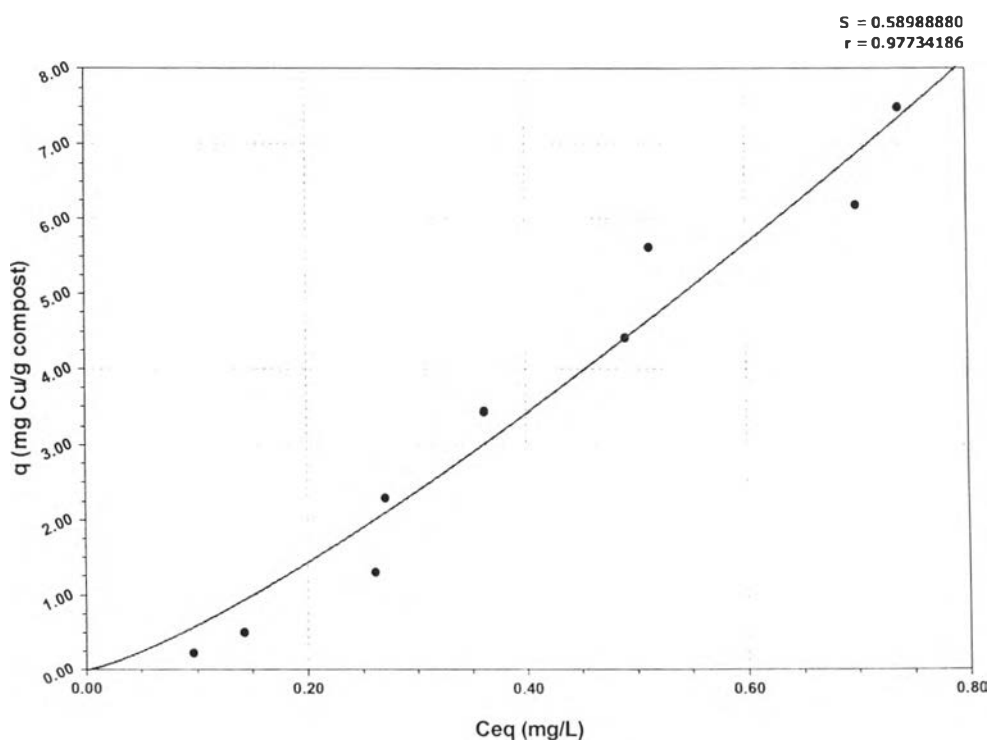


Figure C.14 The Cu Freundlich isotherm curve of the 50% MC/initial pH 8 compost

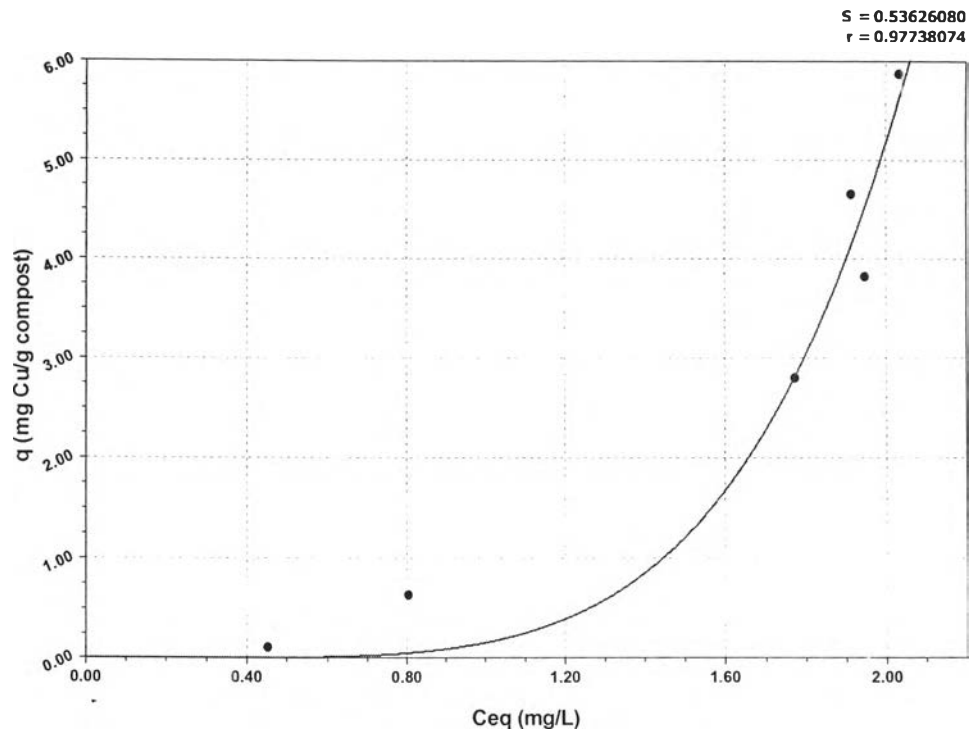


Figure C.15 The Cu Freundlich isotherm curve of the 50% MC/initial pH 9 compost

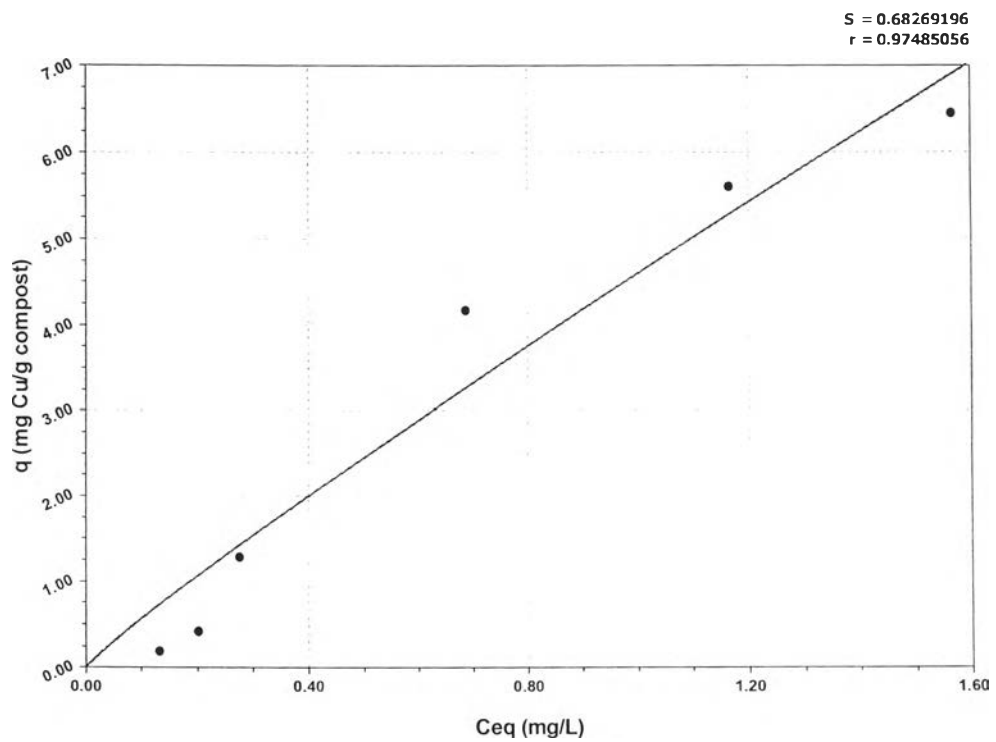


Figure C.16 The Cu Freundlich isotherm curve of the 60% MC/initial pH 5 compost

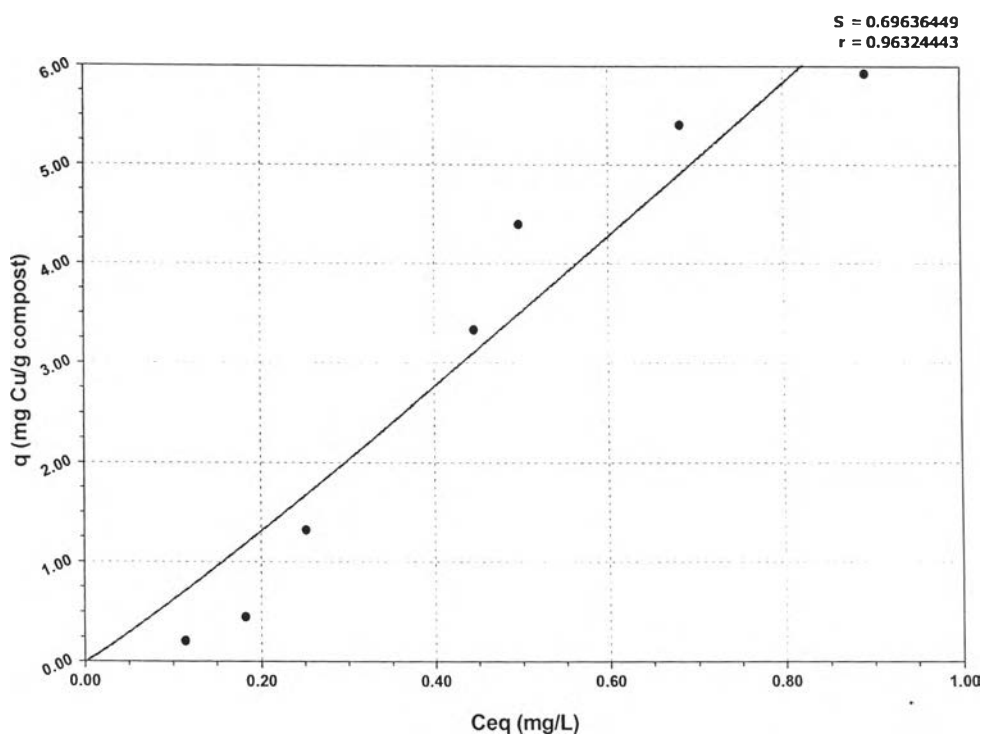


Figure C.17 The Cu Freundlich isotherm curve of the 60% MC/initial pH 6 compost

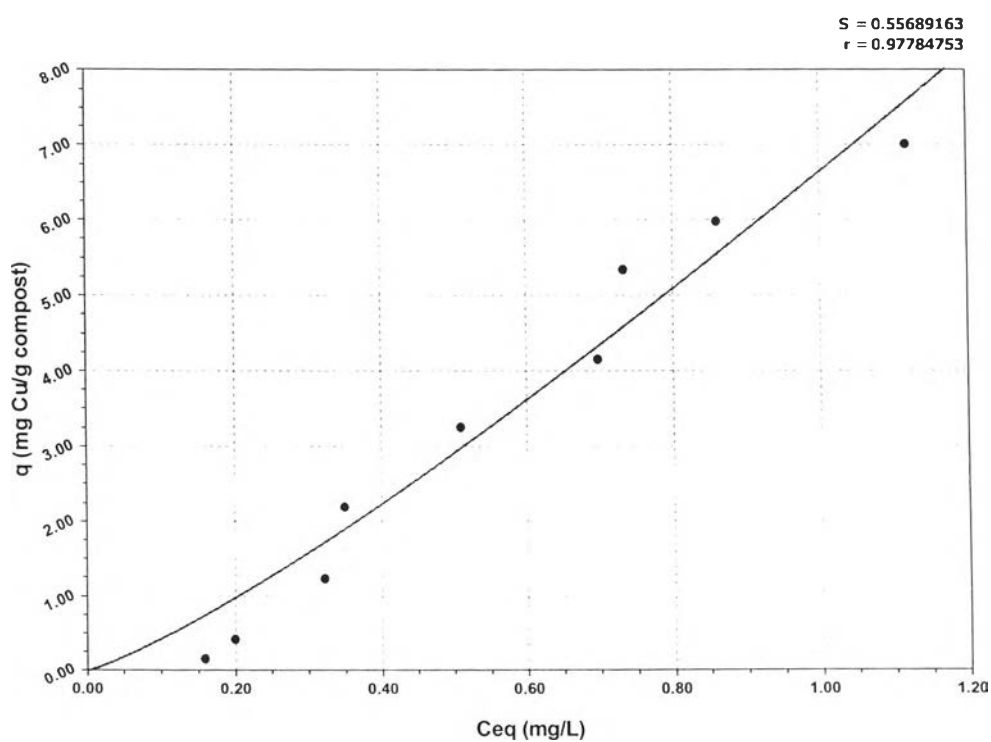


Figure C.18 The Cu Freundlich isotherm curve of the 60% MC/initial pH 7 compost

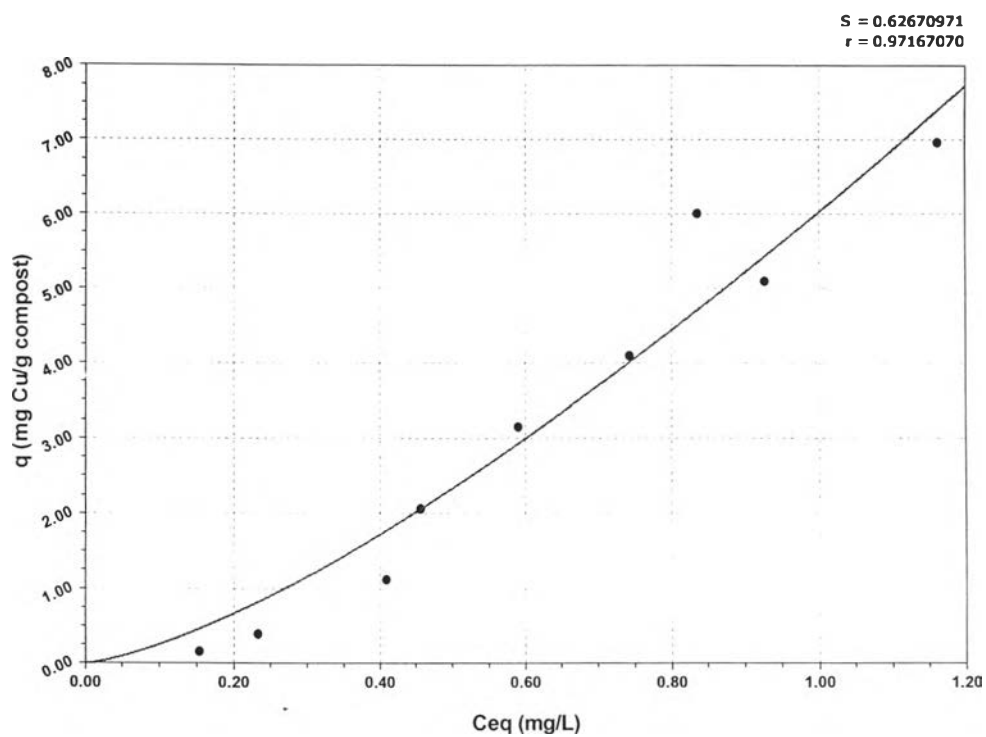


Figure C.19 The Cu Freundlich isotherm curve of the 60% MC/initial pH 8 compost

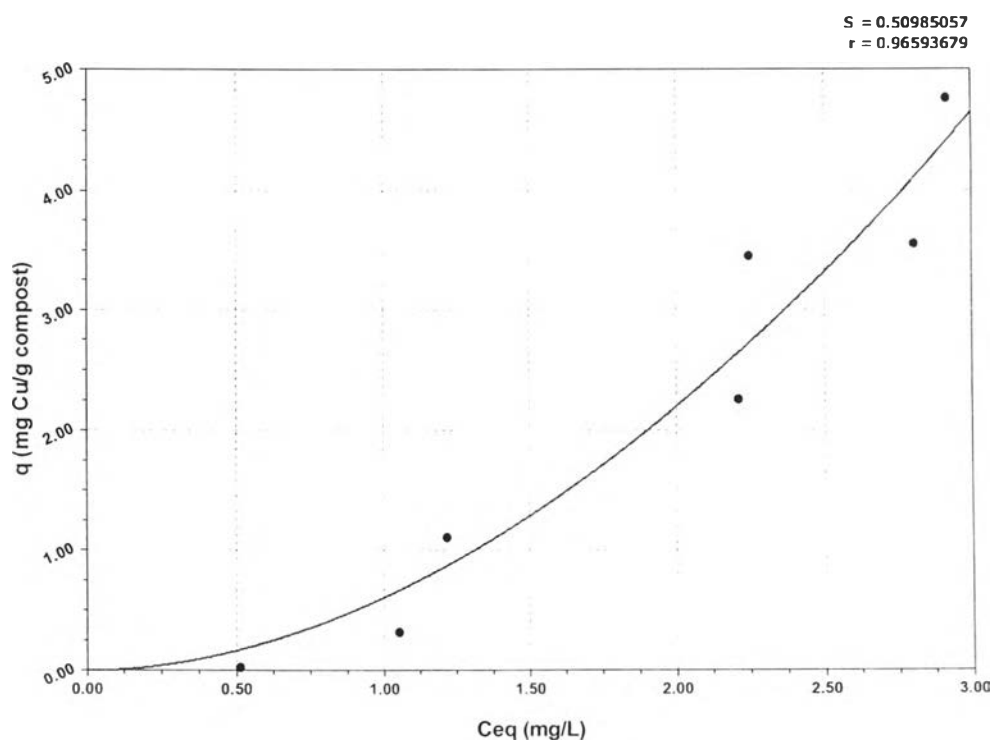


Figure C.20 The Cu Freundlich isotherm curve of the 60% MC/initial pH 9 compost

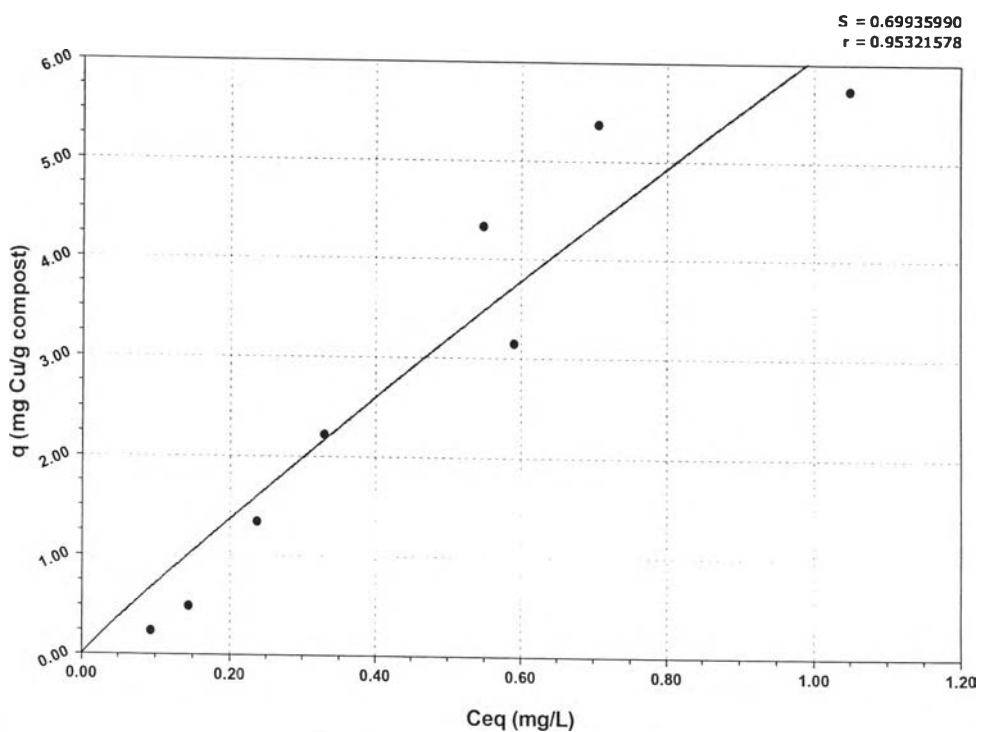


Figure C.21 The Cu Freundlich isotherm curve of the 70% MC/initial pH 5 compost

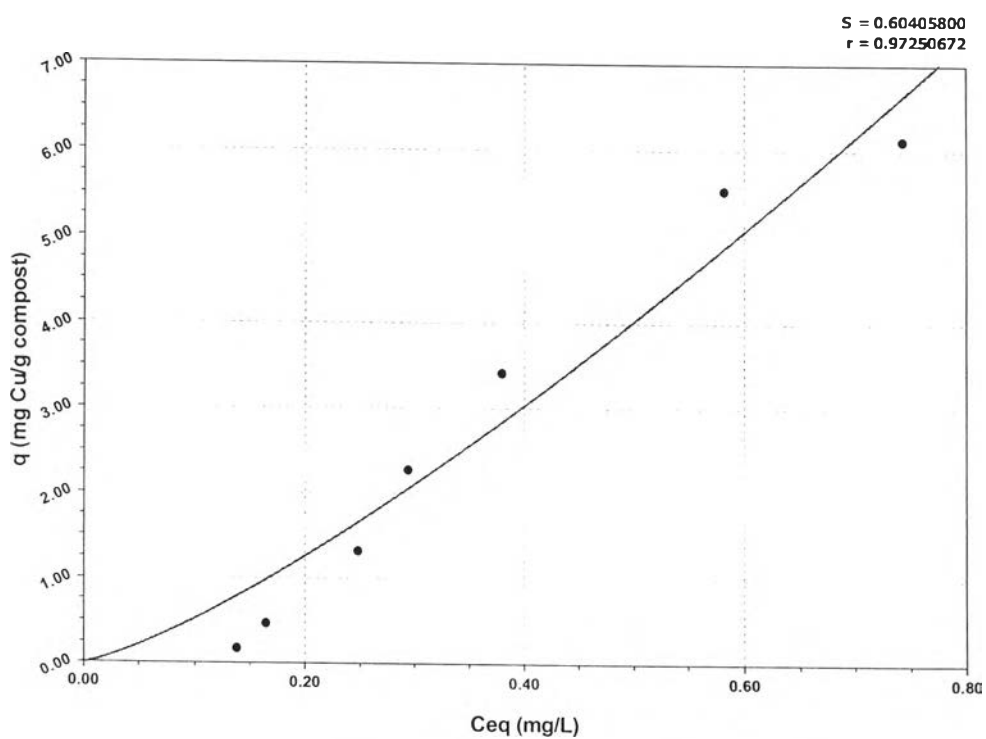


Figure C.22 The Cu Freundlich isotherm curve of the 70% MC/initial pH 6 compost

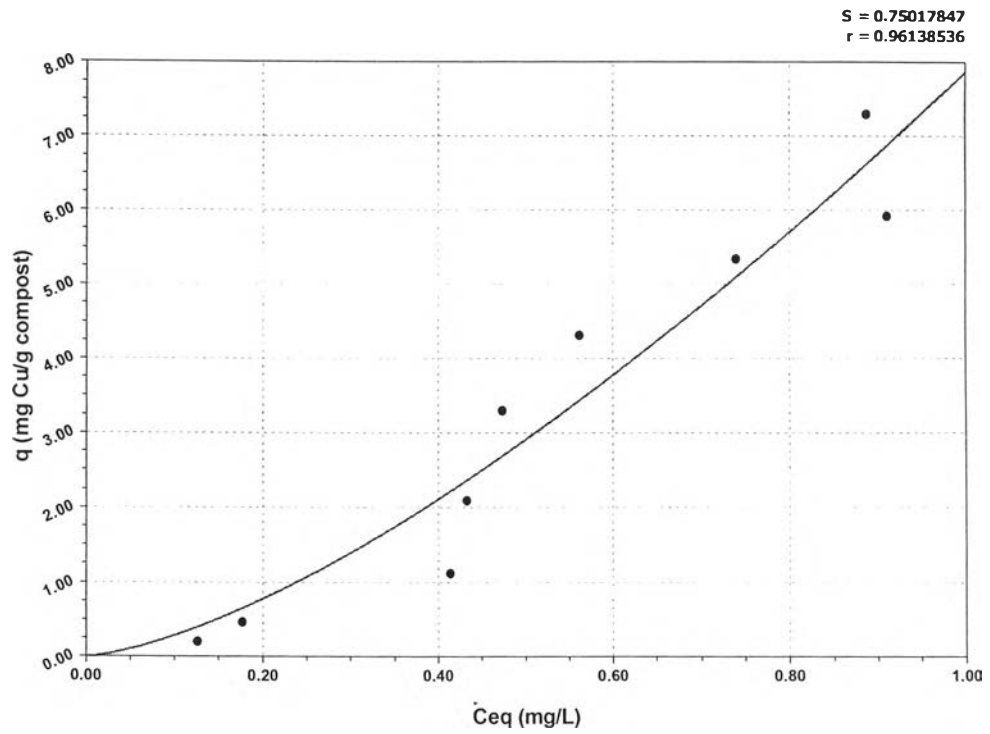


Figure C.23 The Cu Freundlich isotherm curve of the 70% MC/initial pH 7 compost

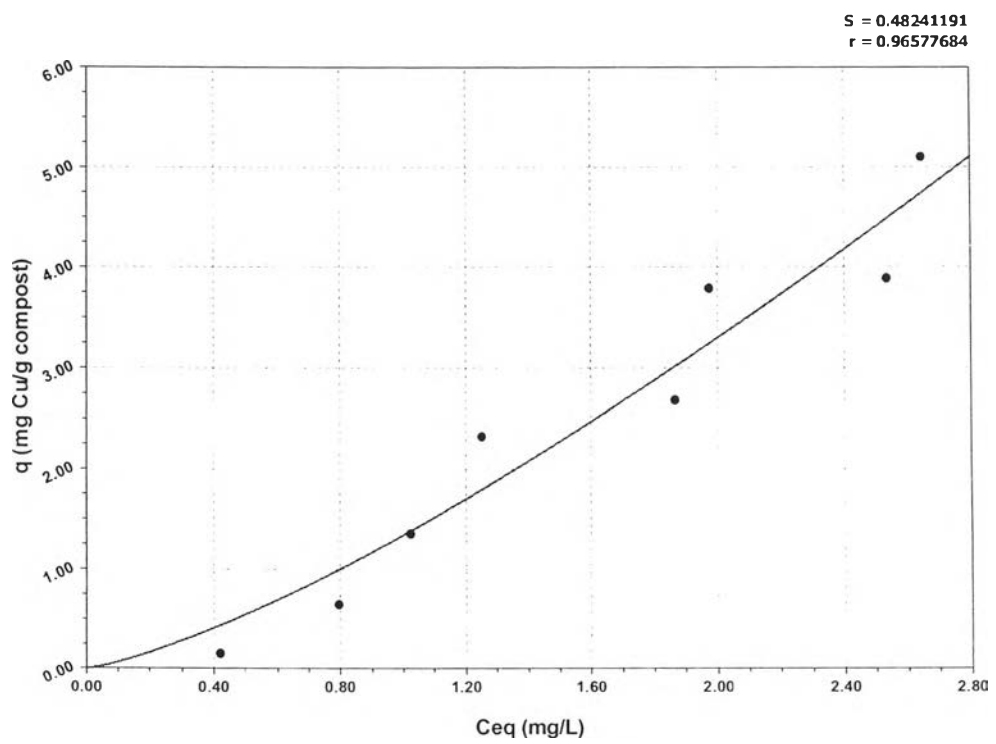


Figure C.24 The Cu Freundlich isotherm curve of the 70% MC/initial pH 8 compost

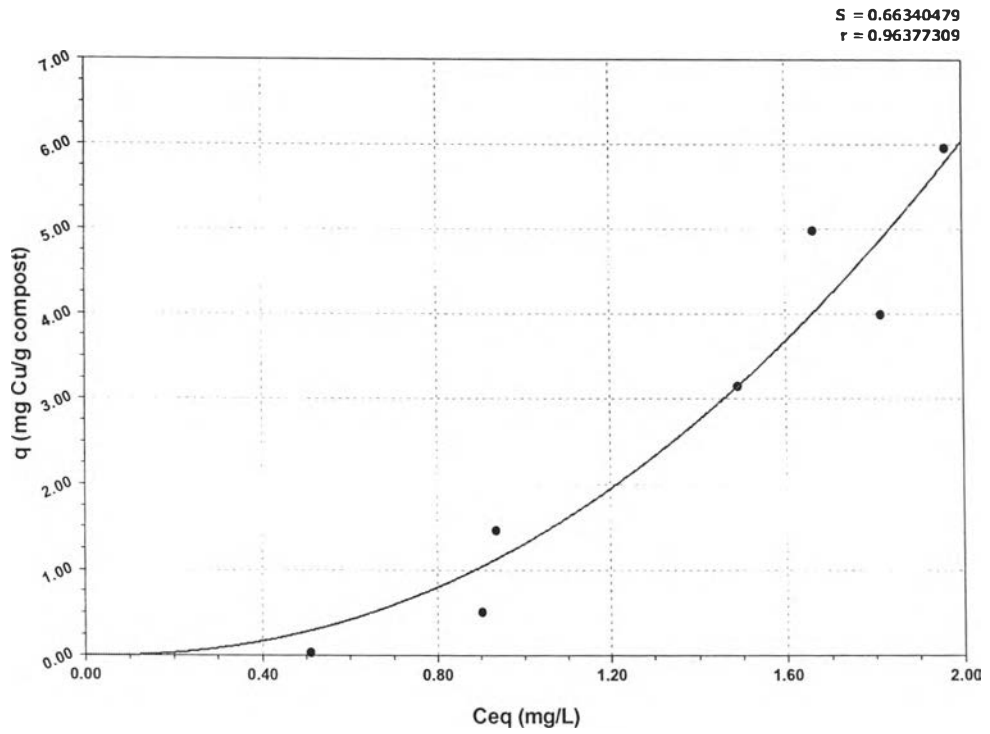


Figure C.25 The Cu Freundlich isotherm curve of the 70% MC/initial pH 5 compost

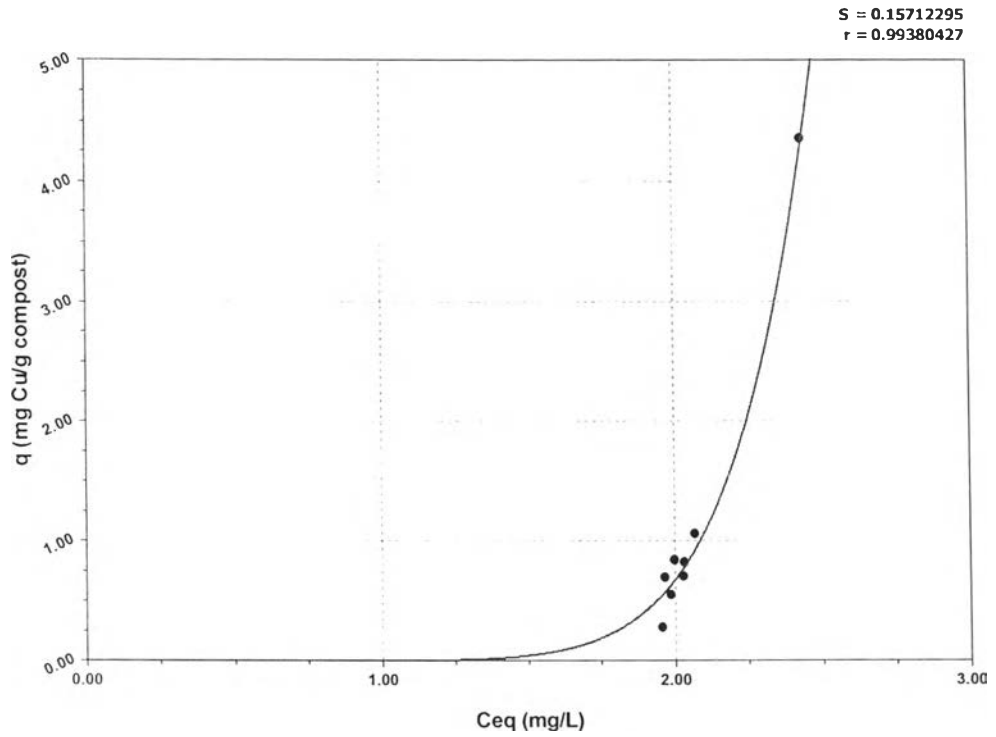


Figure C.26 The Cu Freundlich isotherm curve of the non-composted grass

Appendix D

The Pb Freundlich isotherm curves of the different condition composts

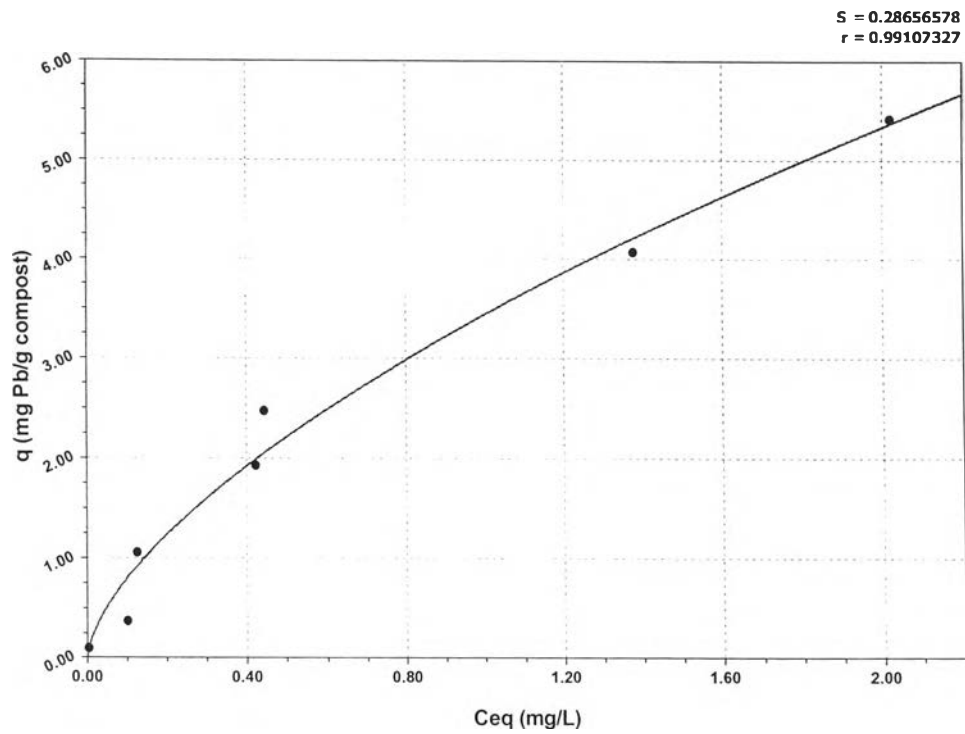


Figure D.1 The Pb Freundlich isotherm curve of the 30% MC/initial pH 5 compost

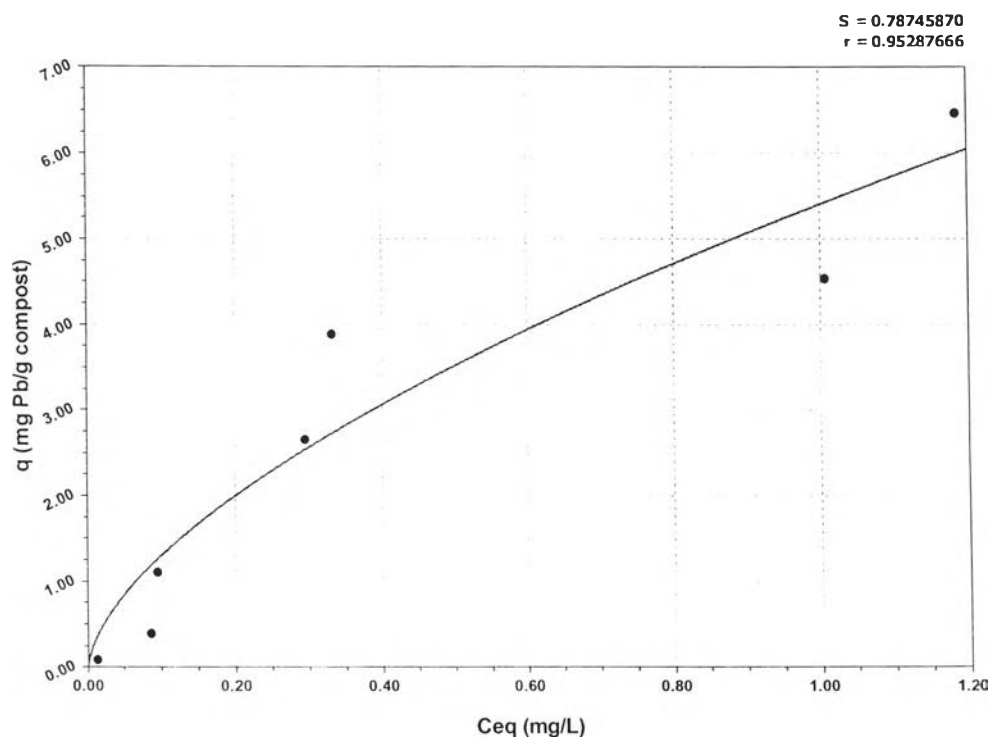


Figure D.2 The Pb Freundlich isotherm curve of the 30% MC/initial pH 6 compost

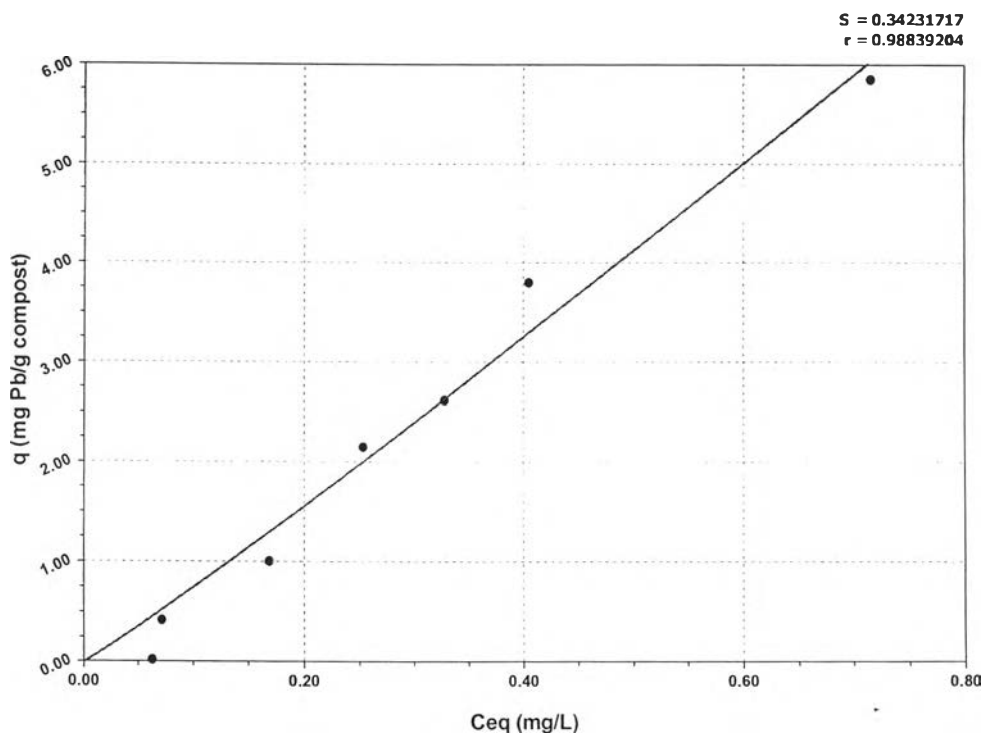


Figure D.3 The Pb Freundlich isotherm curve of the 30% MC/initial pH 7 compost

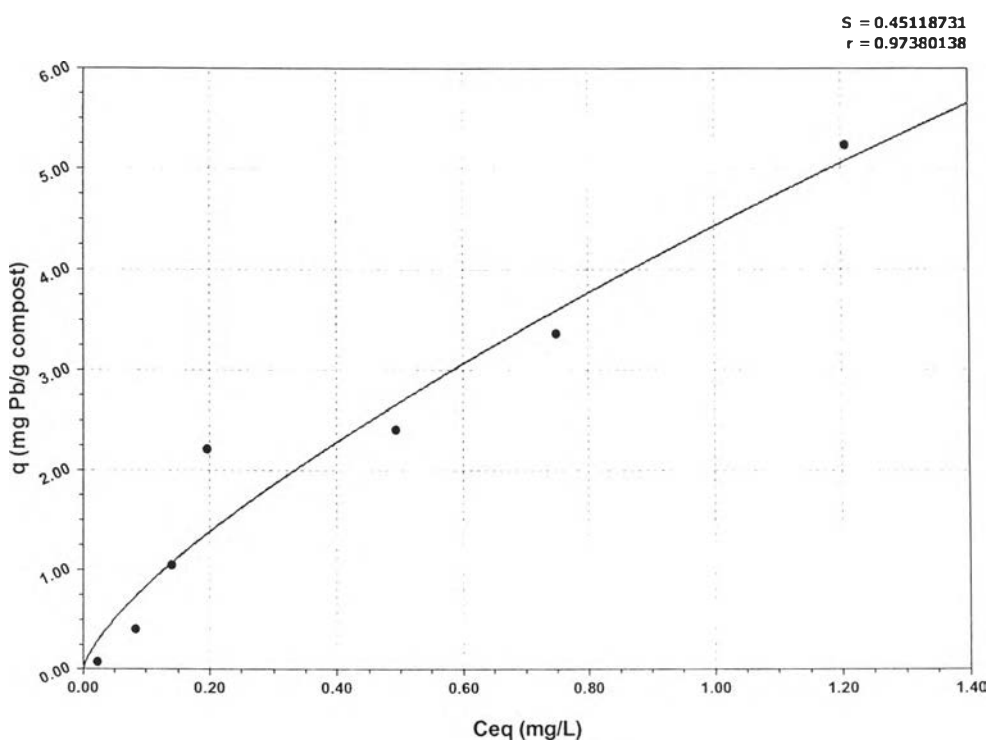


Figure D.4 The Pb Freundlich isotherm curve of the 30% MC/initial pH 8 compost

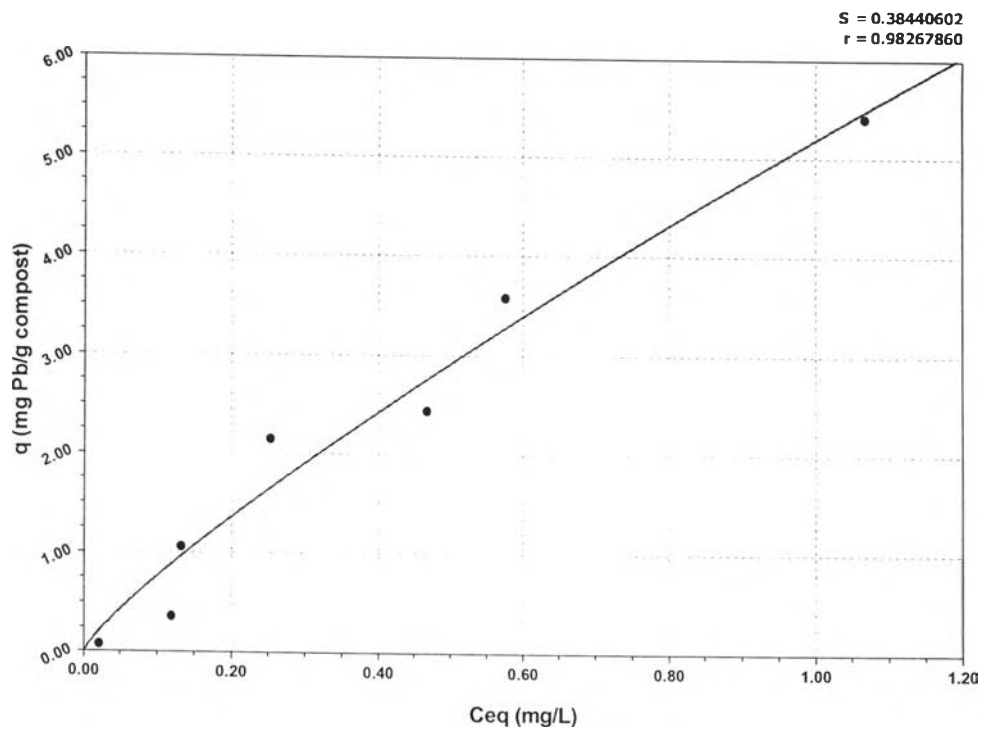


Figure D.5 The Pb Freundlich isotherm curve of the 30% MC/initial pH 9 compost

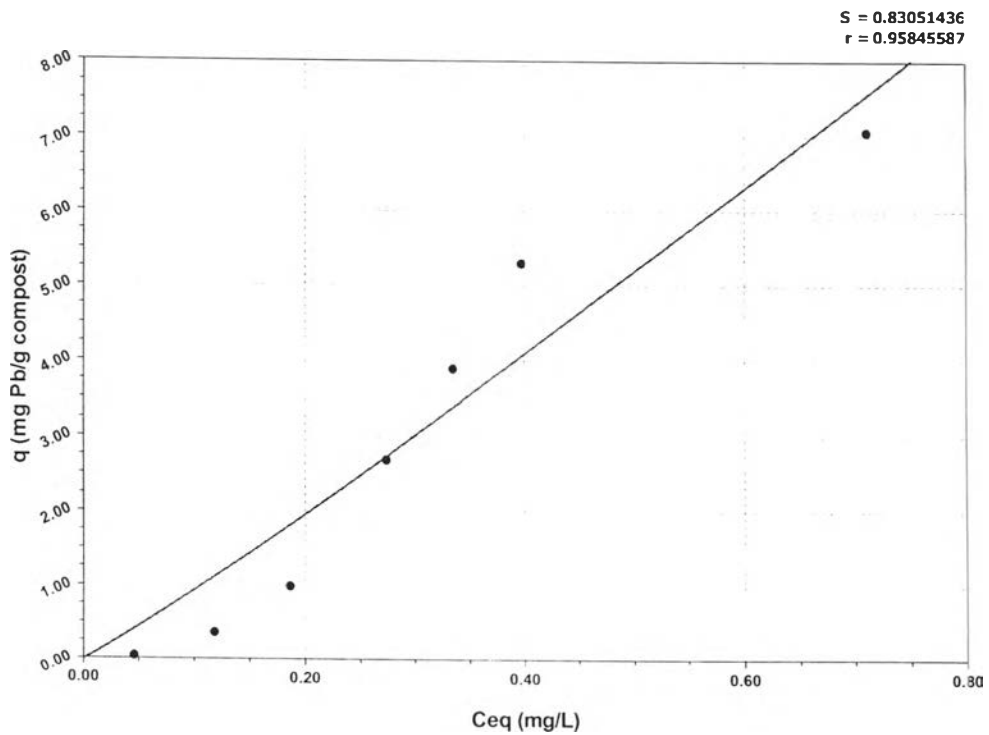


Figure D.6 The Pb Freundlich isotherm curve of the 40% MC/initial pH 5 compost

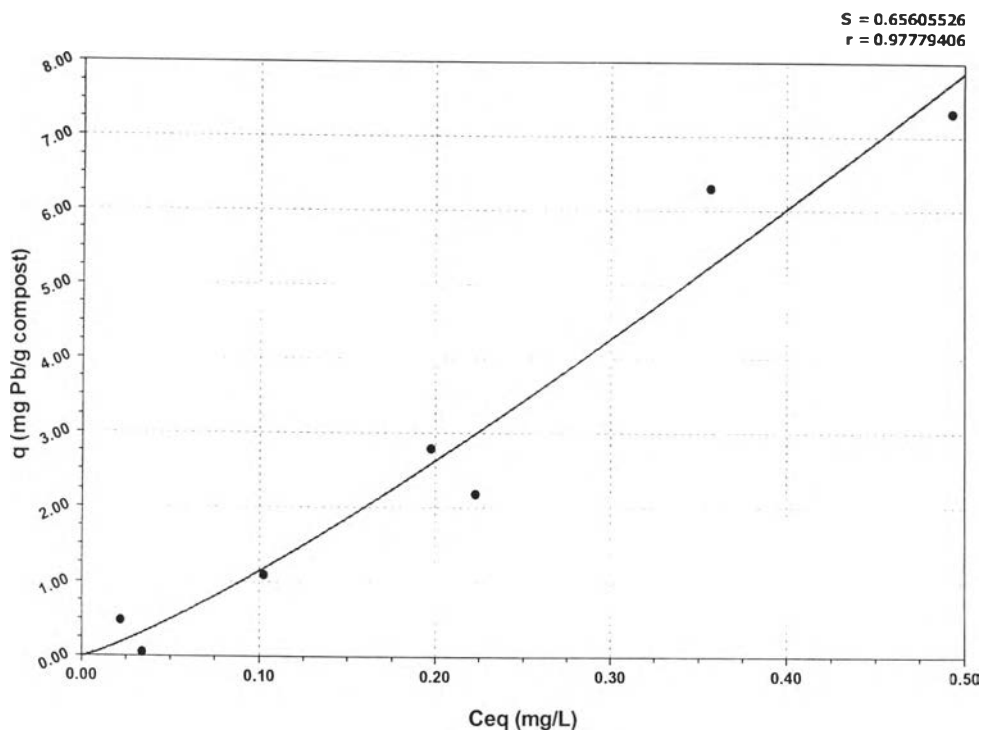


Figure D.7 The Pb Freundlich isotherm curve of the 40% MC/initial pH 6 compost

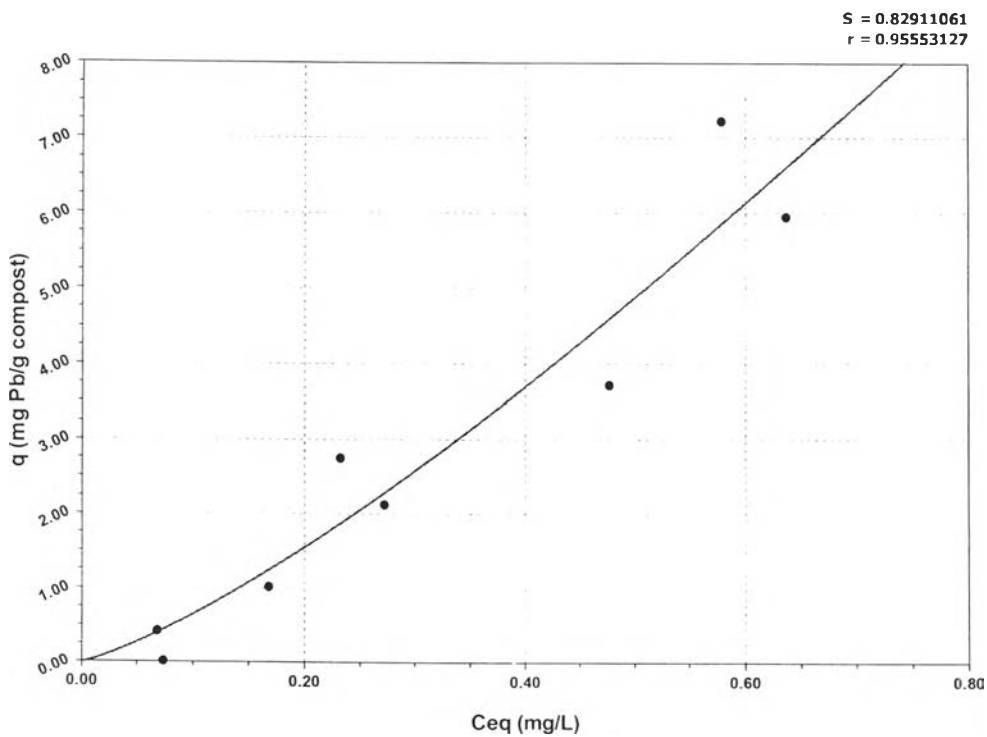


Figure D.8 The Pb Freundlich isotherm curve of the 40% MC/initial pH 7 compost

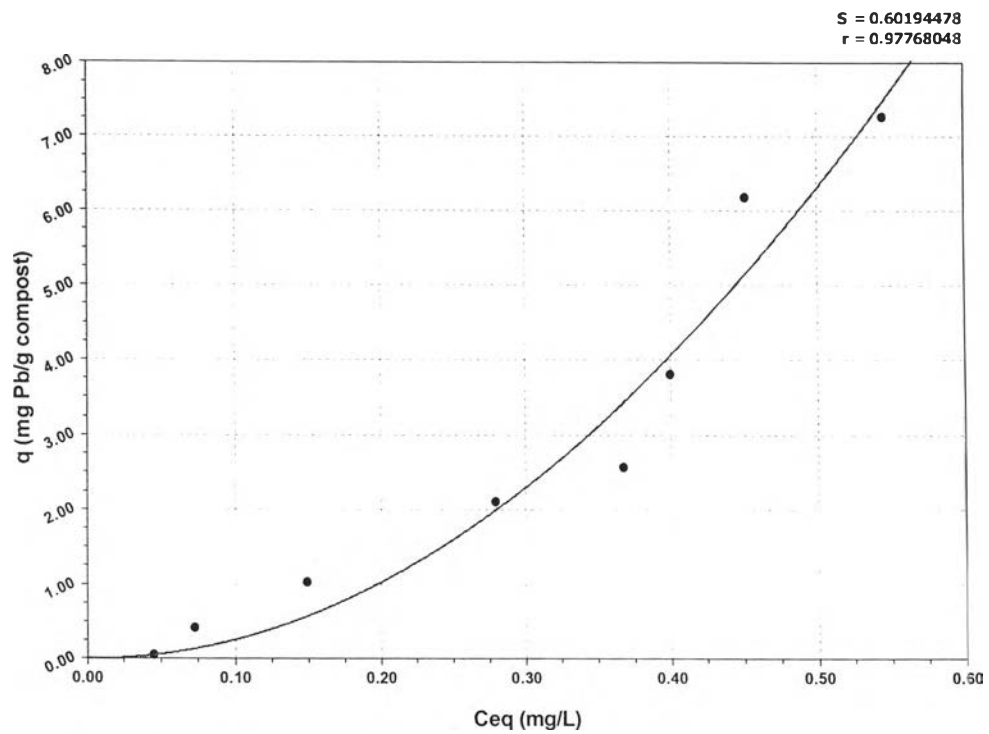


Figure D.9 The Pb Freundlich isotherm curve of the 40% MC/initial pH 8 compost

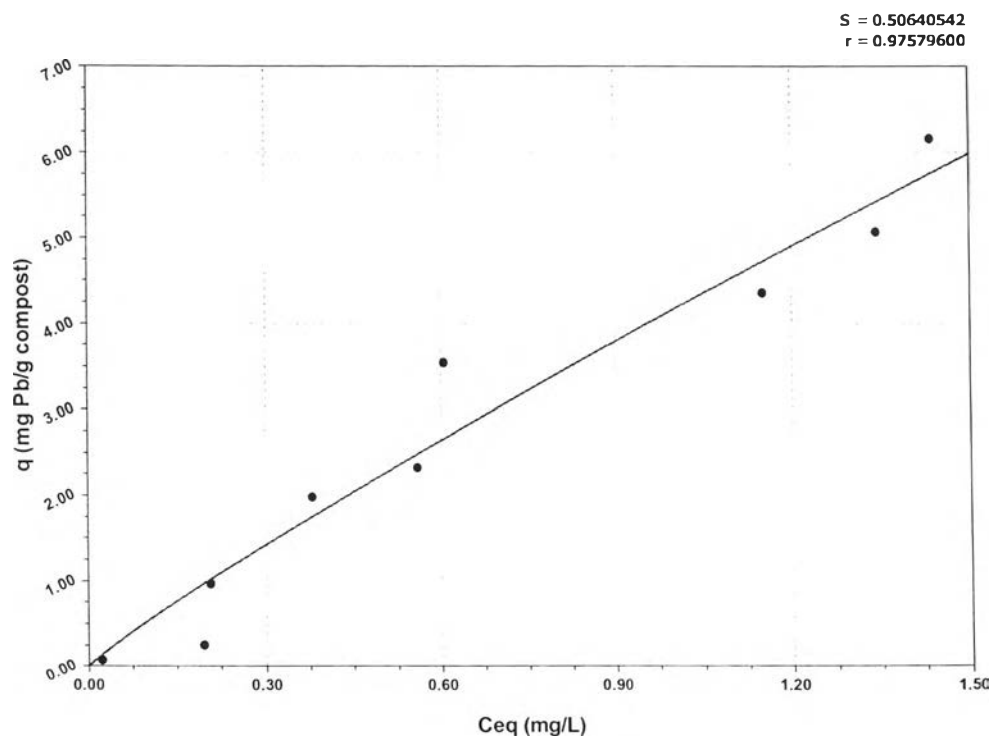


Figure D.10 The Pb Freundlich isotherm curve of the 40% MC/initial pH 9 compost

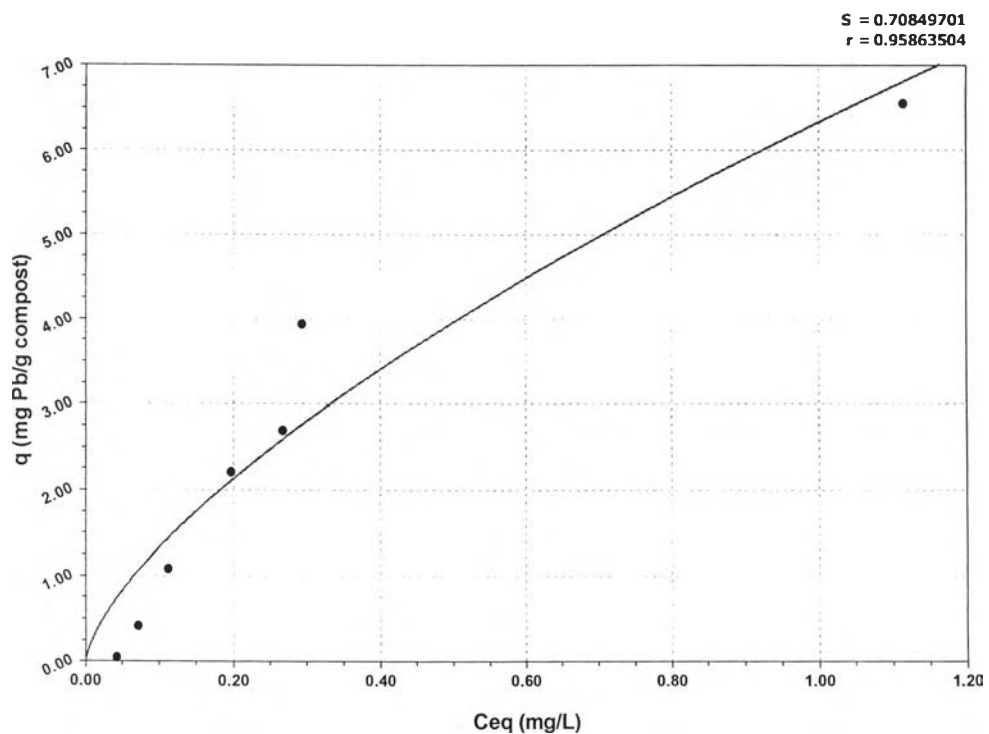


Figure D.11 The Pb Freundlich isotherm curve of the 50% MC/initial pH 5 compost

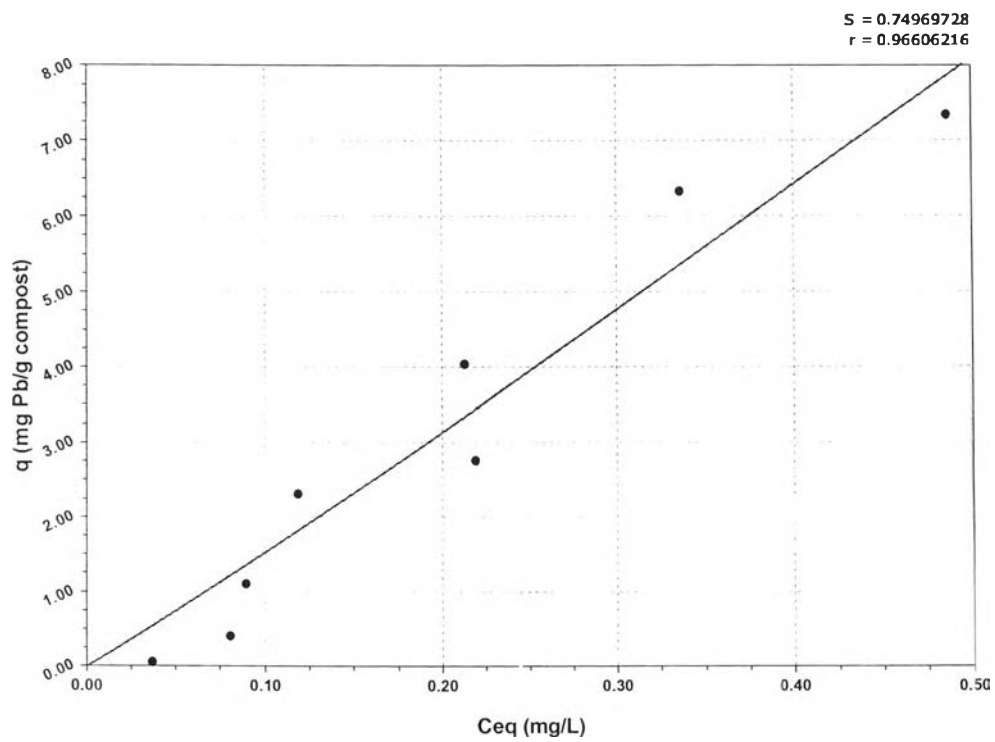


Figure D.12 The Pb Freundlich isotherm curve of the 50% MC/initial pH 6 compost

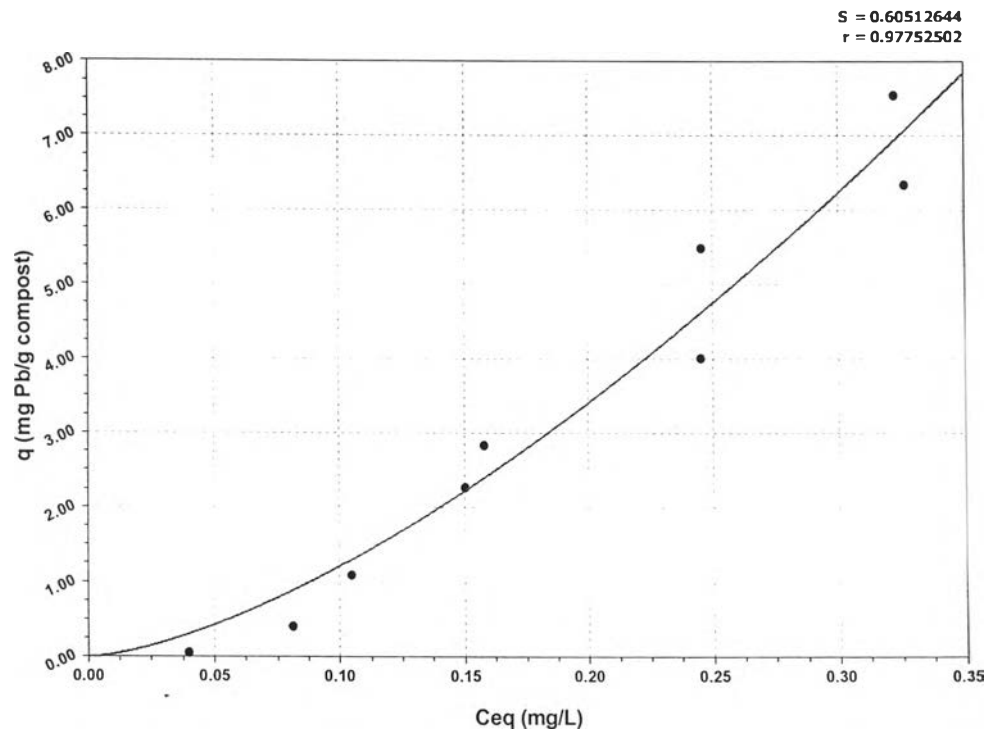


Figure D.13 The Pb Freundlich isotherm curve of the 50% MC/initial pH 7 compost

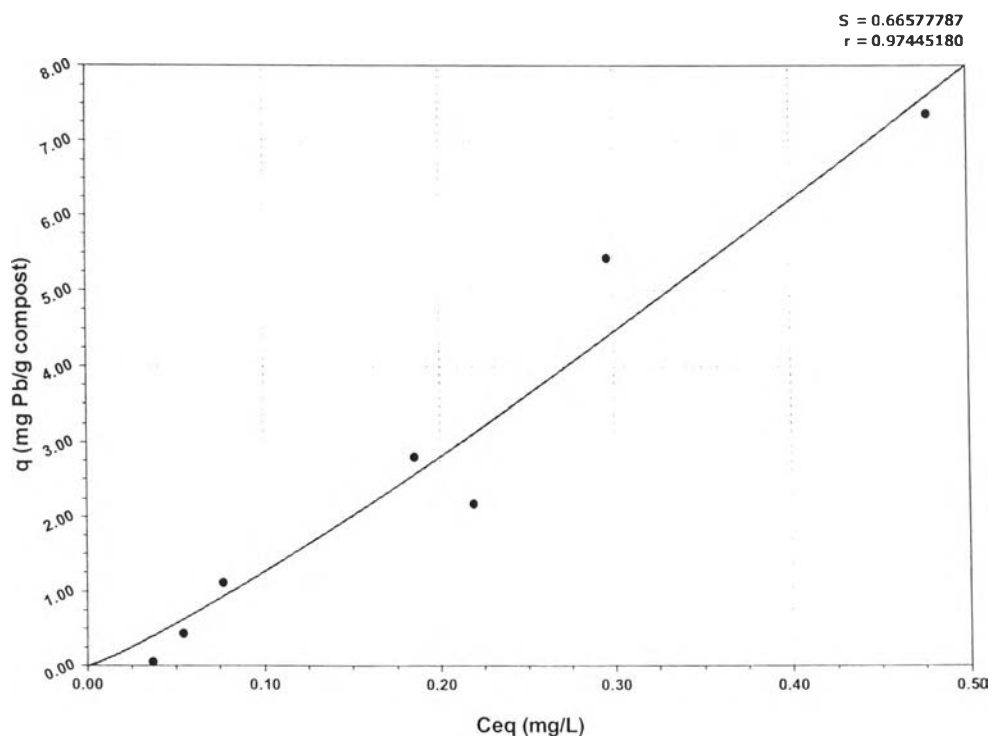


Figure D.14 The Pb Freundlich isotherm curve of the 50% MC/initial pH 8 compost

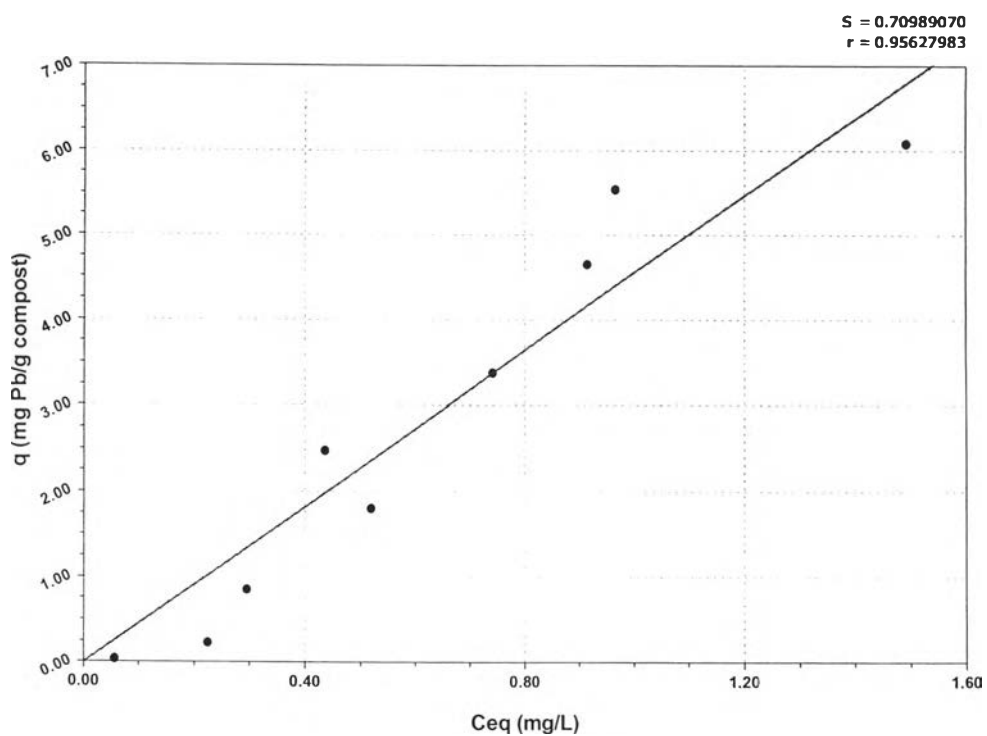


Figure D.15 The Pb Freundlich isotherm curve of the 50% MC/initial pH 9 compost

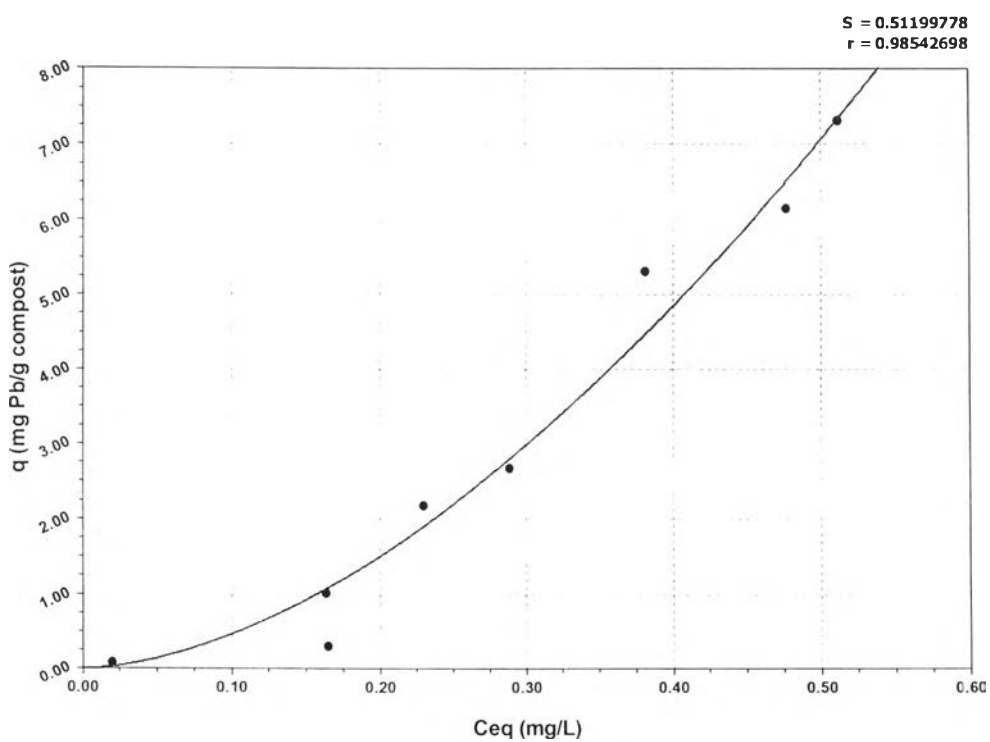


Figure D.16 The Pb Freundlich isotherm curve of the 60% MC/initial pH 5 compost

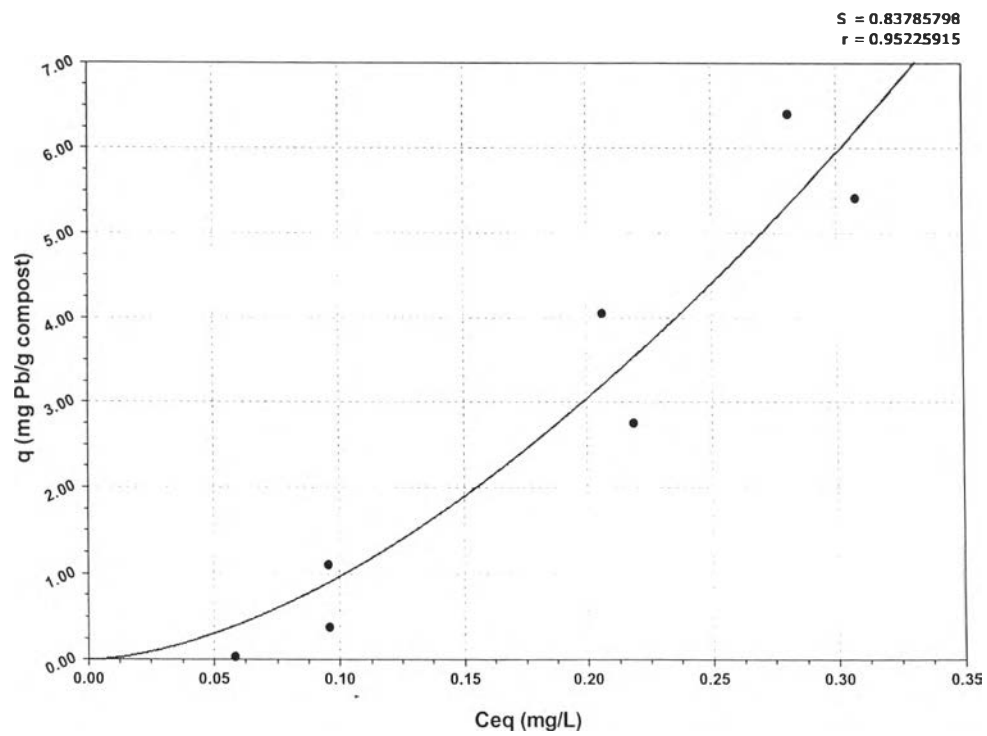


Figure D.17 The Pb Freundlich isotherm curve of the 60% MC/initial pH 6 compost

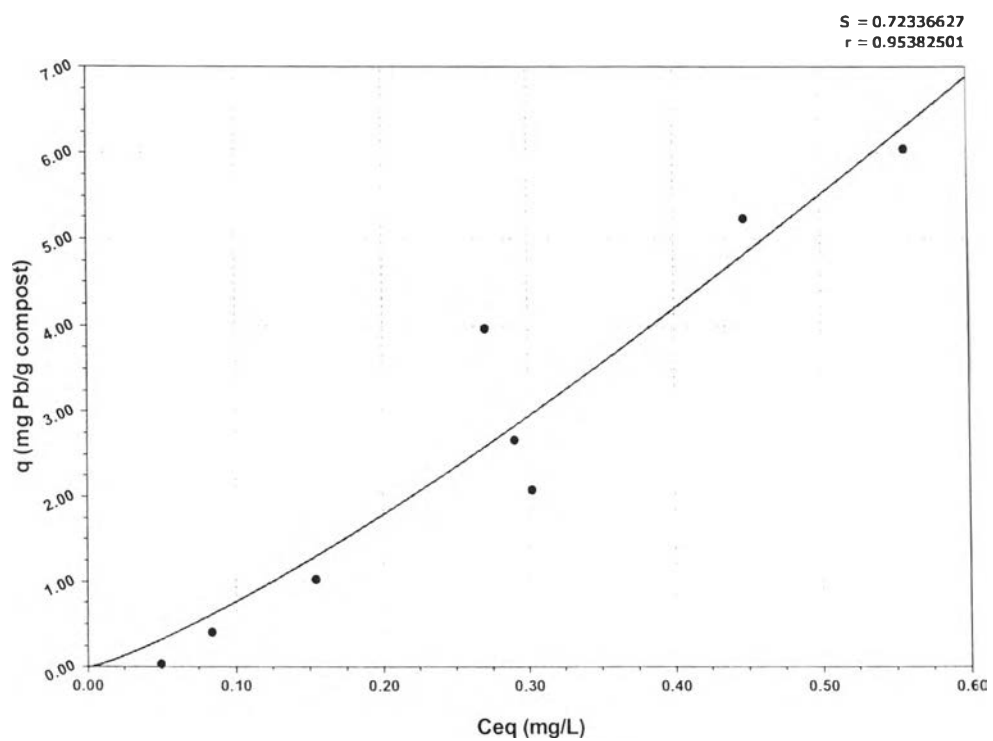


Figure D.18 The Pb Freundlich isotherm curve of the 60% MC/initial pH 7 compost

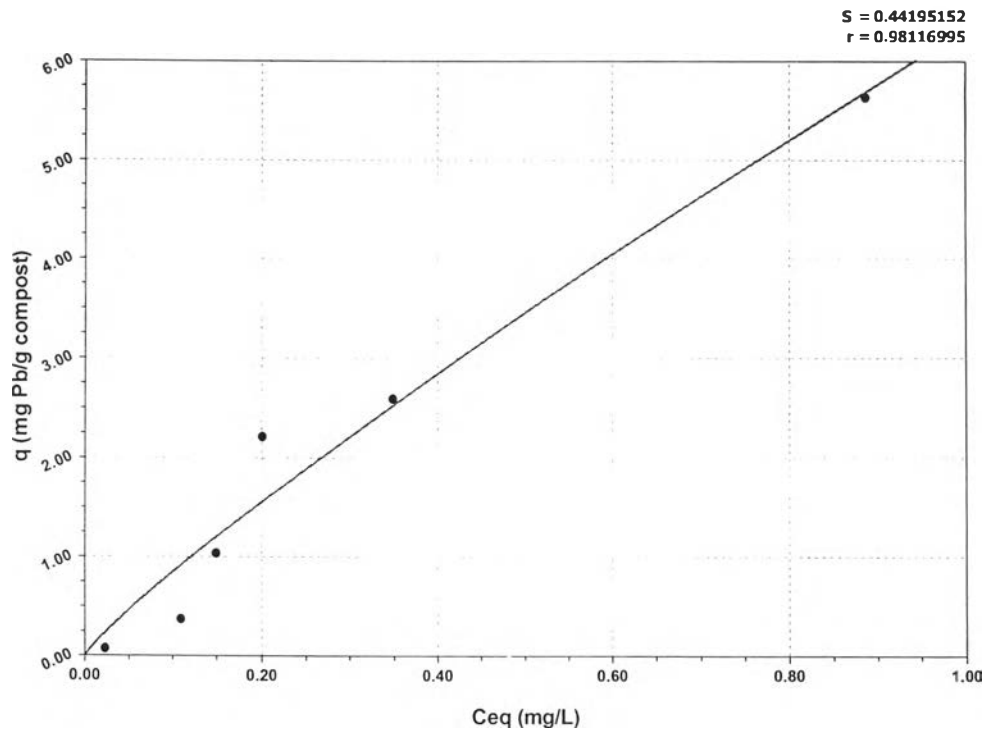


Figure D.19 The Pb Freundlich isotherm curve of the 60% MC/initial pH 8 compost

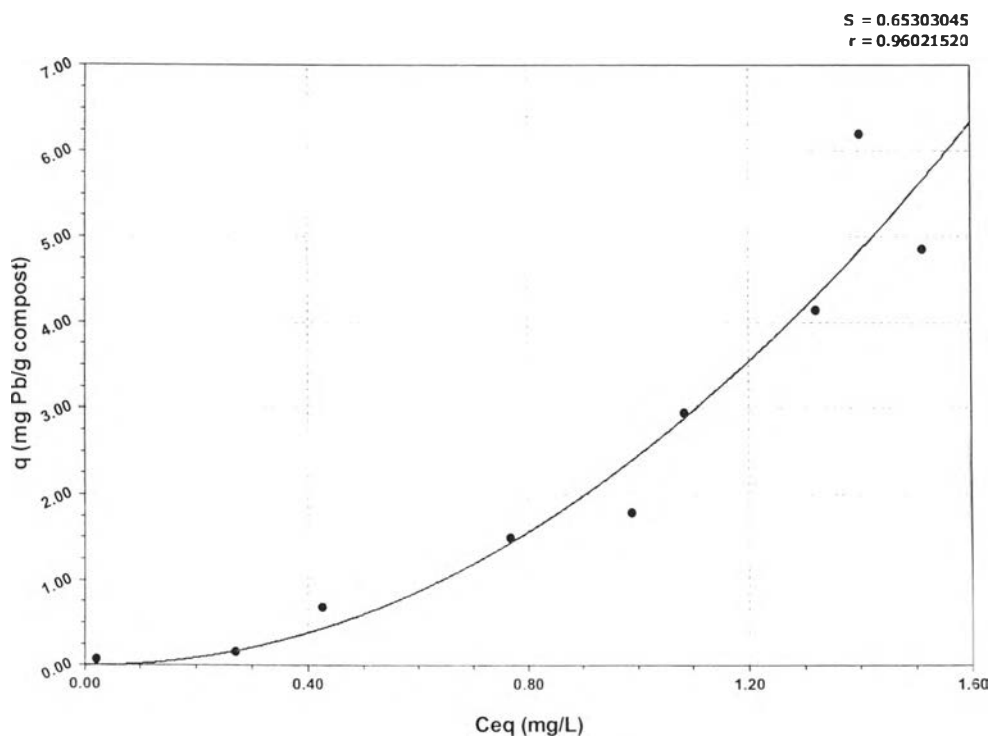


Figure D.20 The Pb Freundlich isotherm curve of the 60% MC/initial pH 9 compost

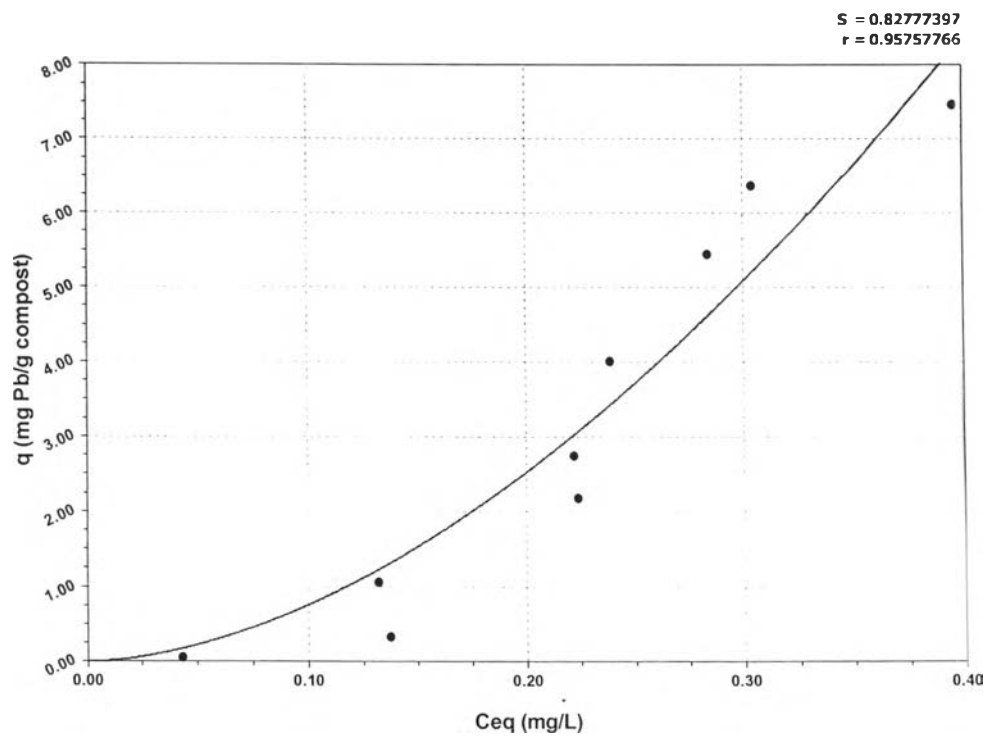


Figure D.21 The Pb Freundlich isotherm curve of the 70% MC/initial pH 5 compost

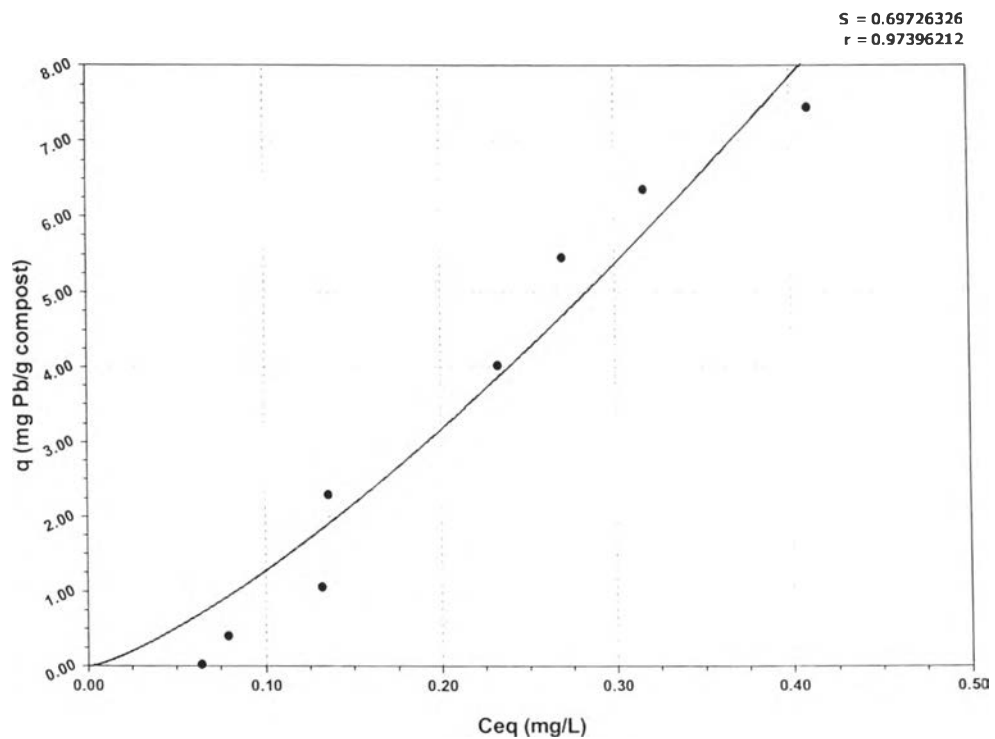


Figure D.22 The Pb Freundlich isotherm curve of the 70% MC/initial pH 6 compost

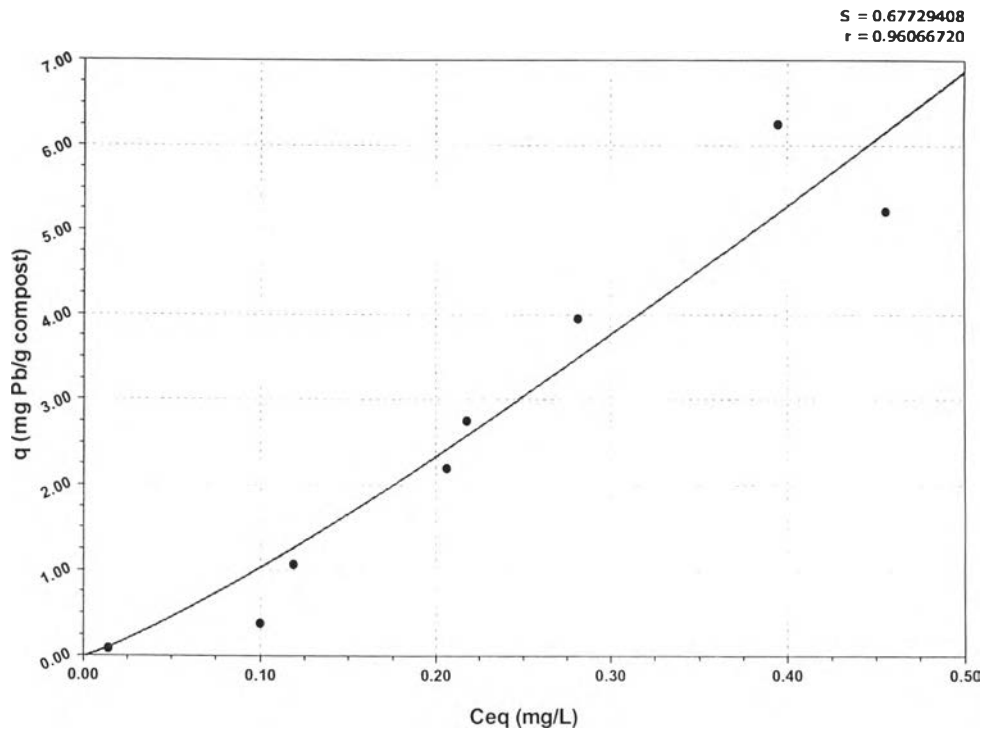


Figure D.23 The Pb Freundlich isotherm curve of the 70% MC/initial pH 7 compost

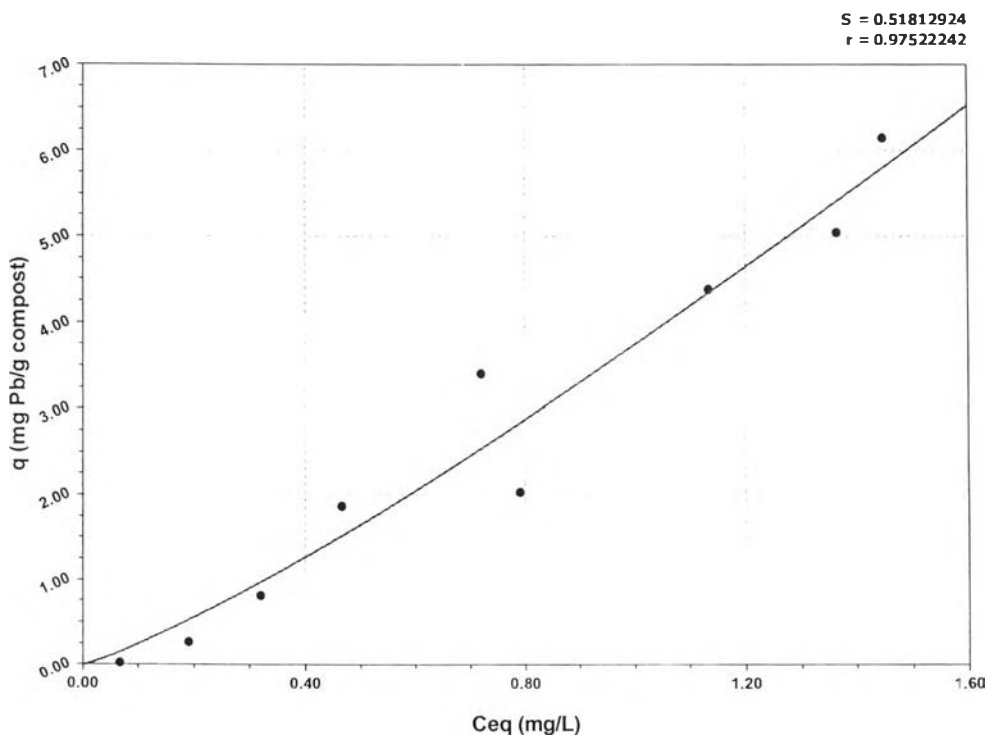


Figure D.24 The Pb Freundlich isotherm curve of the 70% MC/initial pH 8 compost

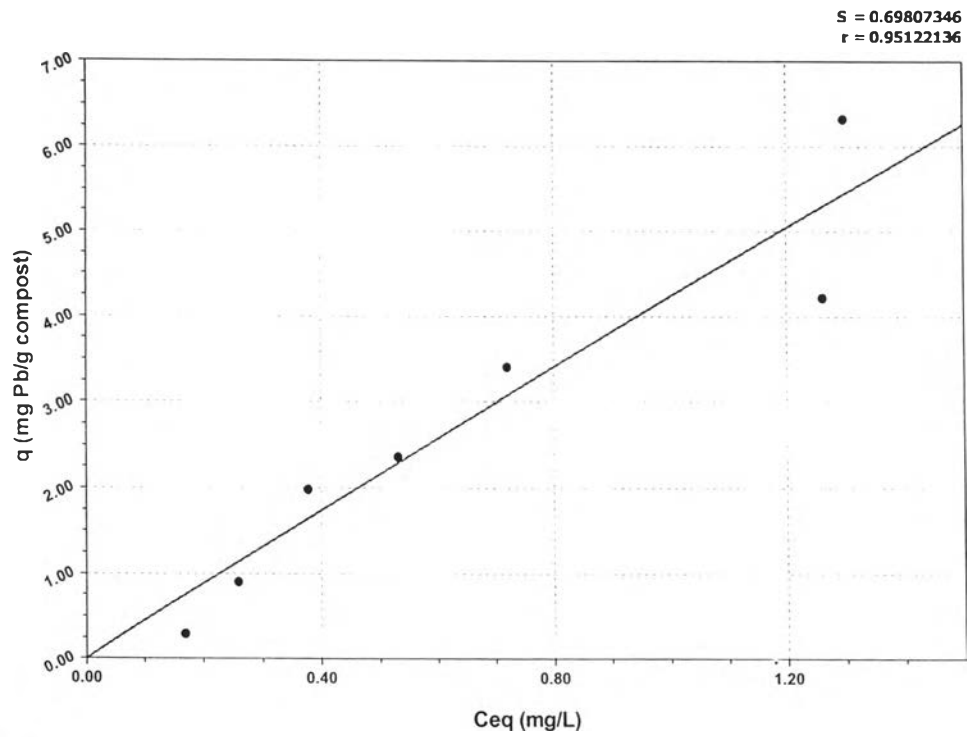


Figure D.25 The Pb Freundlich isotherm curve of the 70% MC/initial pH 5 compost

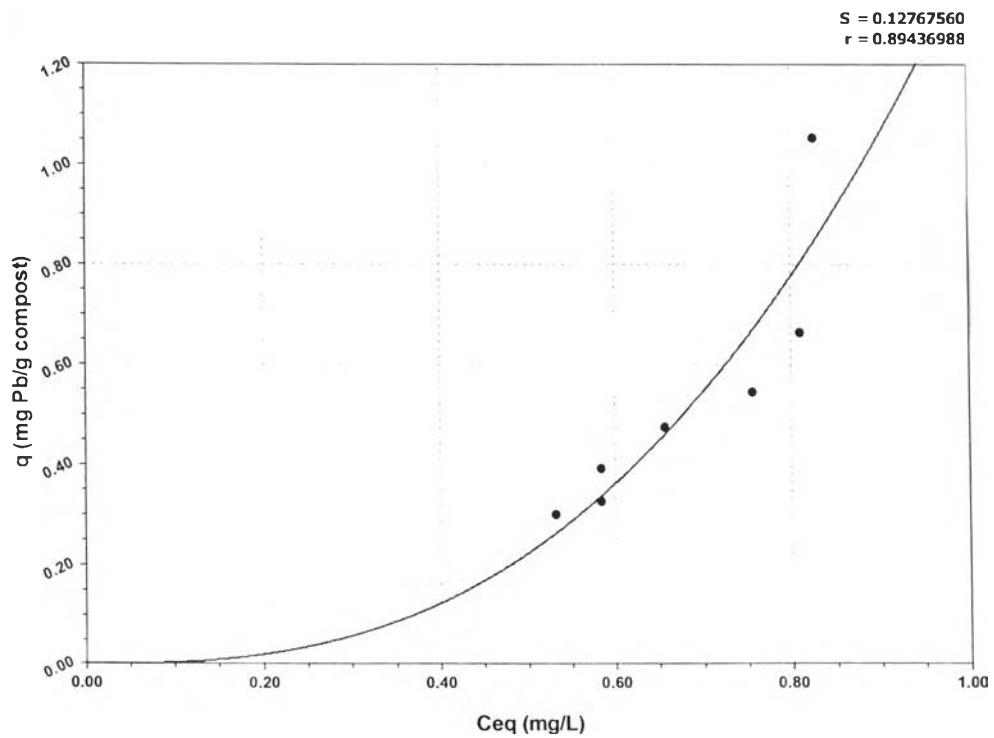


Figure D.26 The Pb Freundlich isotherm curve of the non-composted grass

Appendix E

The Zn Freundlich isotherm curves of the different condition composts

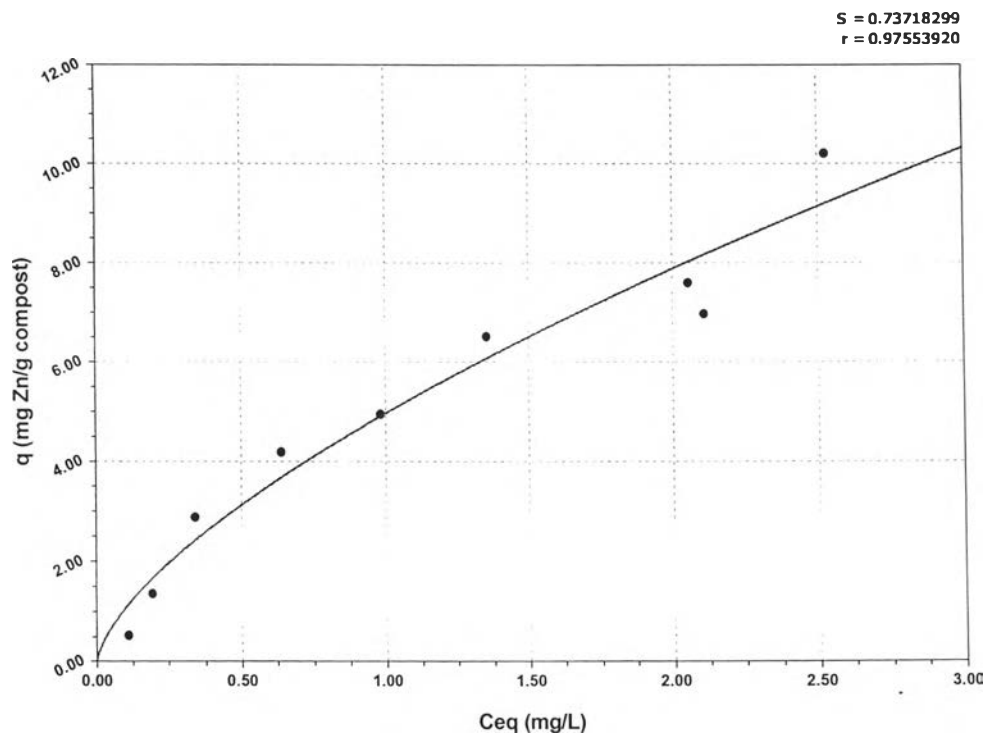


Figure E.1 The Zn Freundlich isotherm curve of the 30% MC/initial pH 5 compost

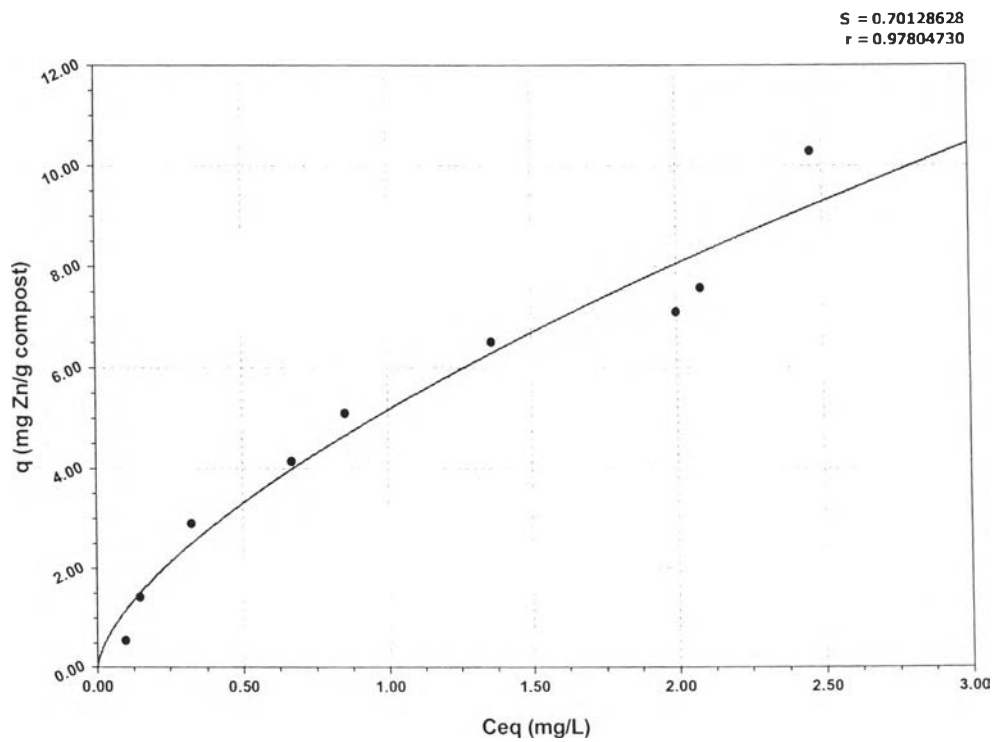


Figure E.2 The Zn Freundlich isotherm curve of the 30% MC/initial pH 6 compost

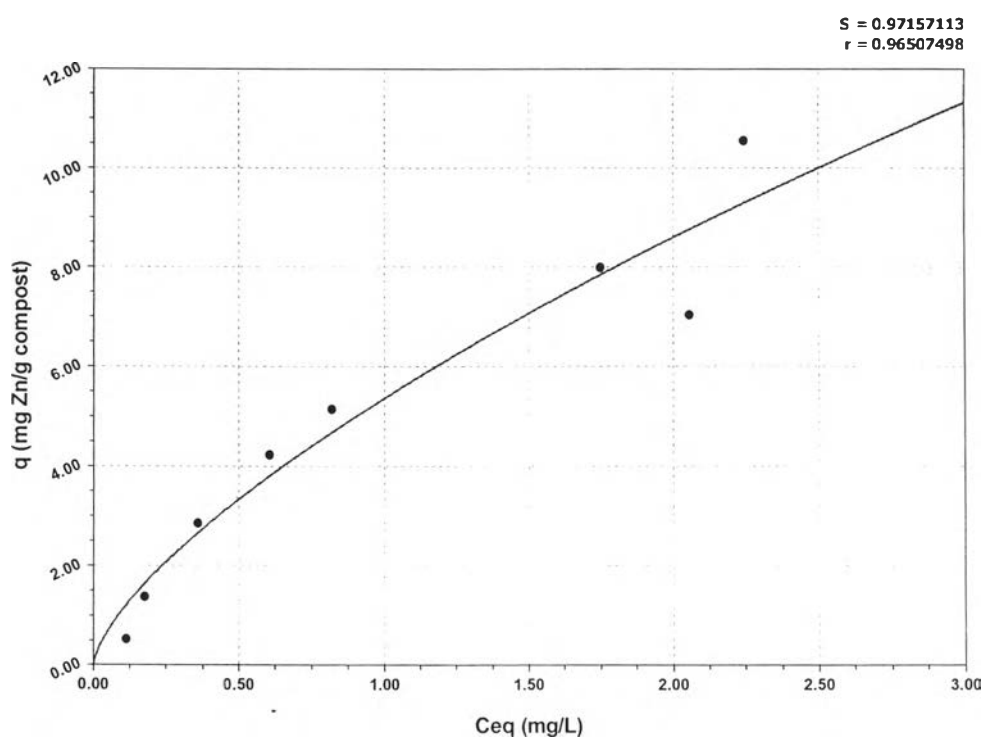


Figure E.3 The Zn Freundlich isotherm curve of the 30% MC/initial pH 7 compost

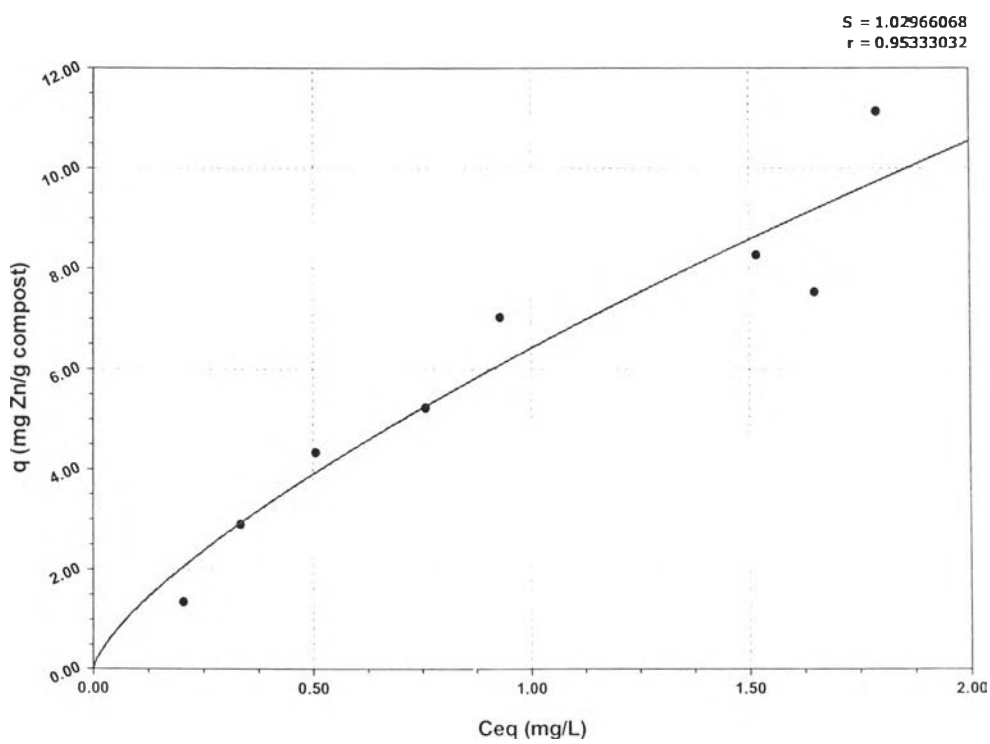


Figure E.4 The Zn Freundlich isotherm curve of the 30% MC/initial pH 8 compost

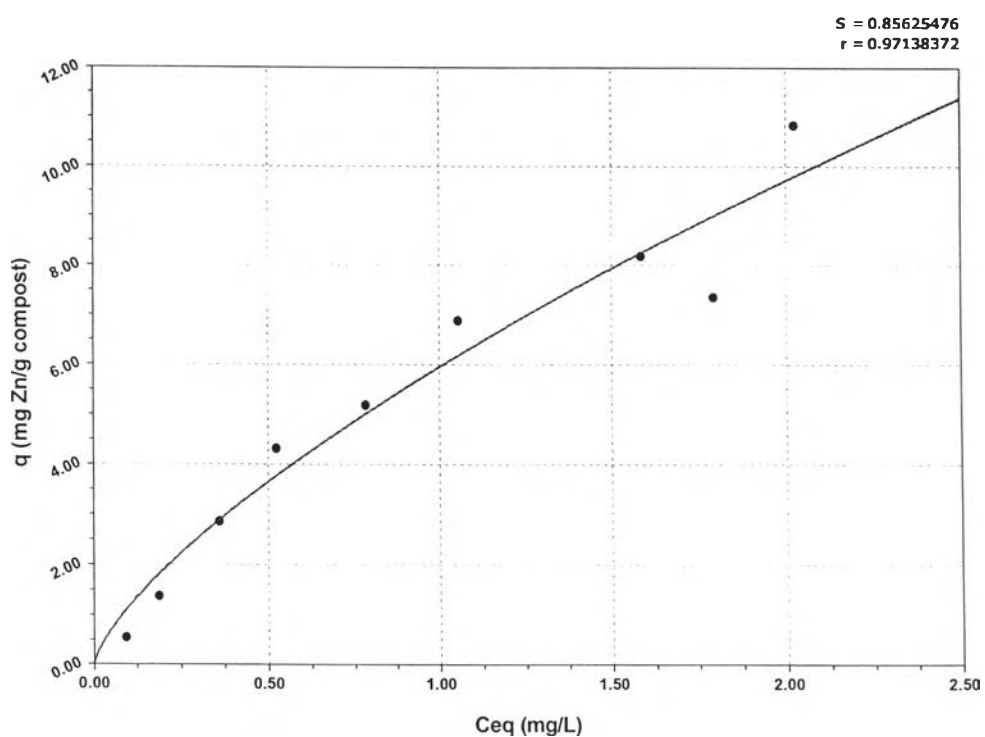


Figure E.5 The Zn Freundlich isotherm curve of the 30% MC/initial pH 9 compost

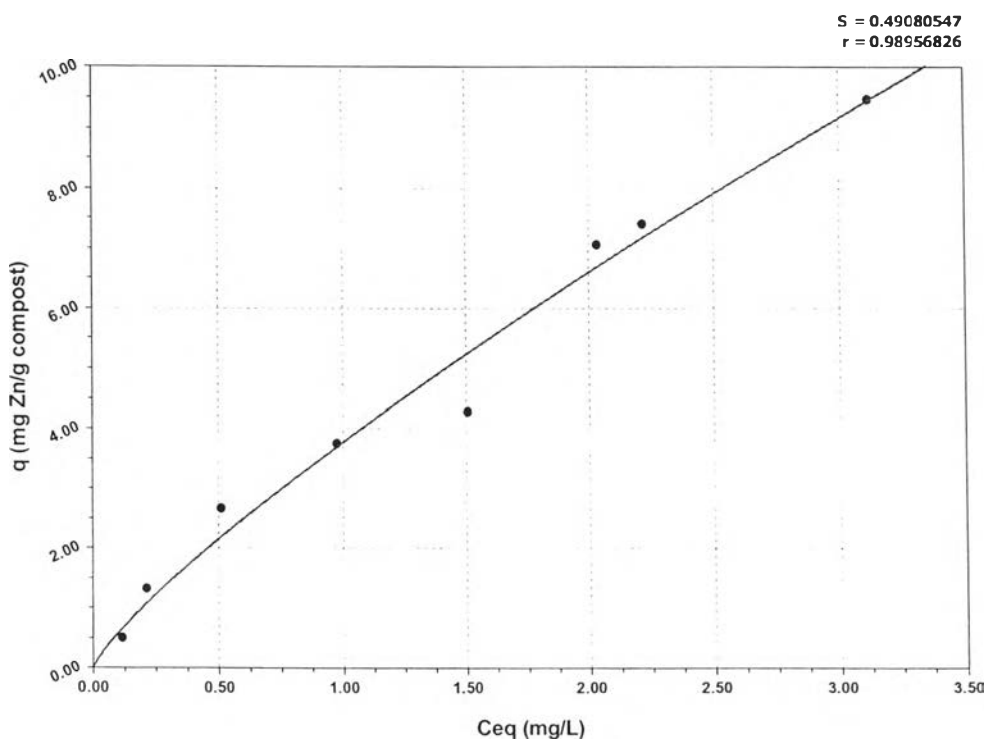


Figure E.6 The Zn Freundlich isotherm curve of the 40% MC/initial pH 5 compost

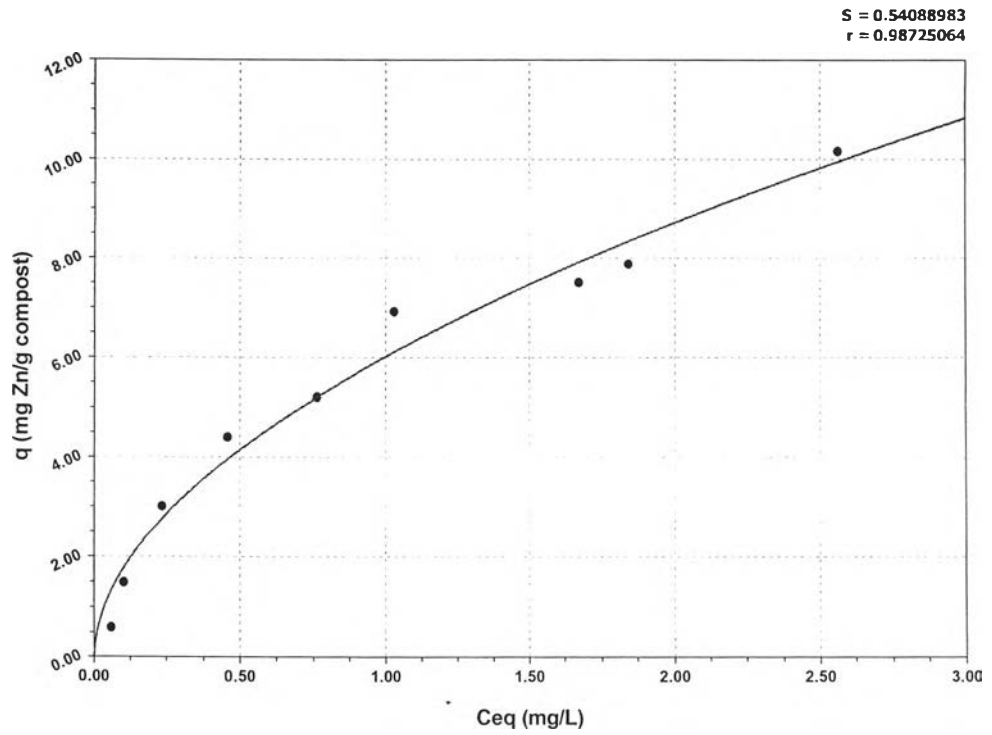


Figure E.7 The Zn Freundlich isotherm curve of the 40% MC/initial pH 6 compost

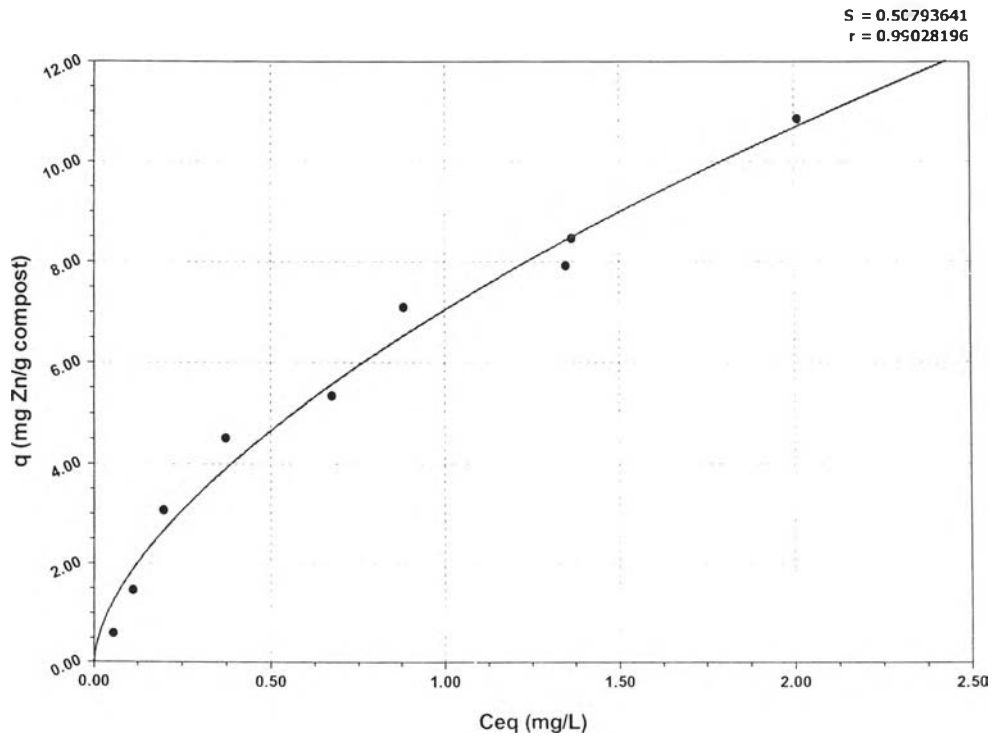


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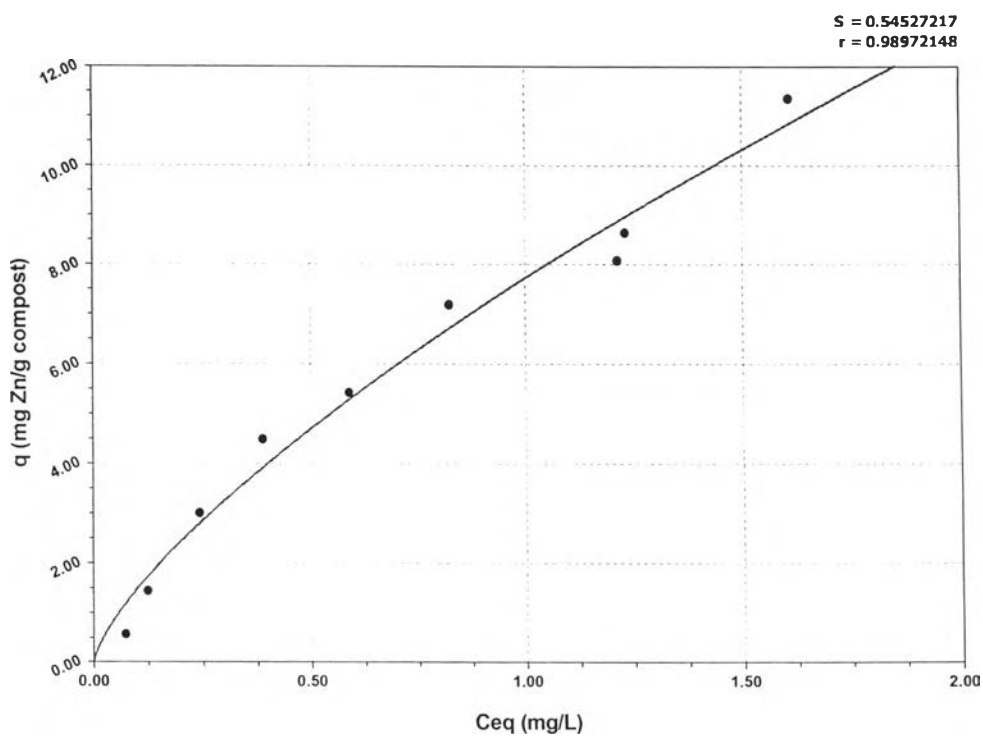


Figure E.9 The Zn Freundlich isotherm curve of the 40% MC/initial pH 8 compost

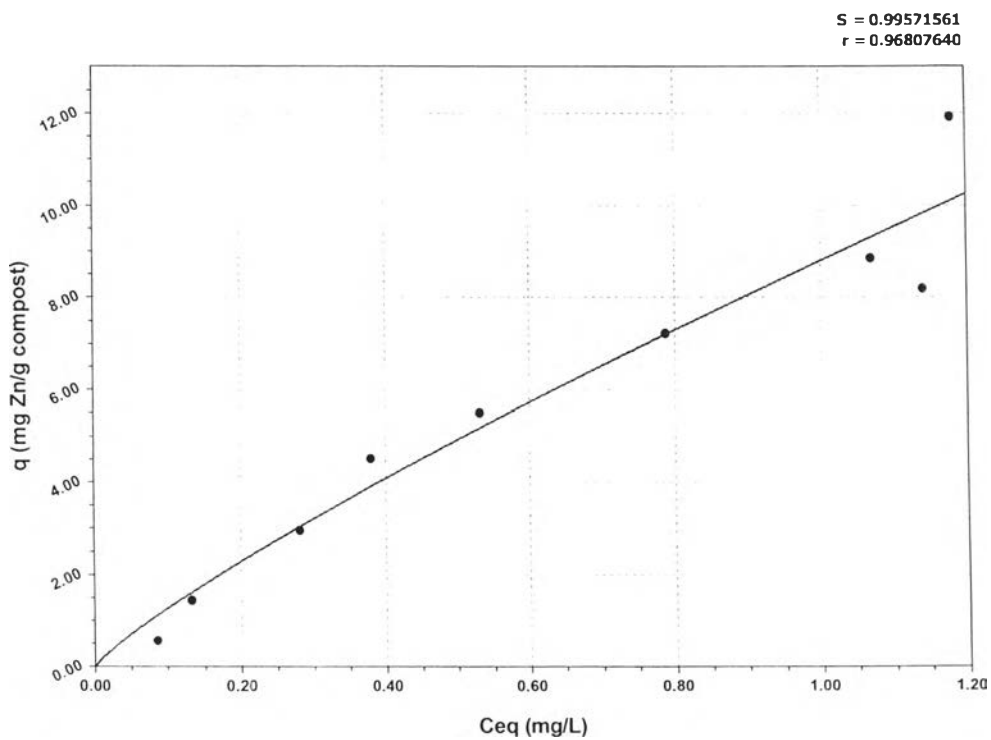


Figure E.10 The Zn Freundlich isotherm curve of the 40% MC/initial pH 9 compost

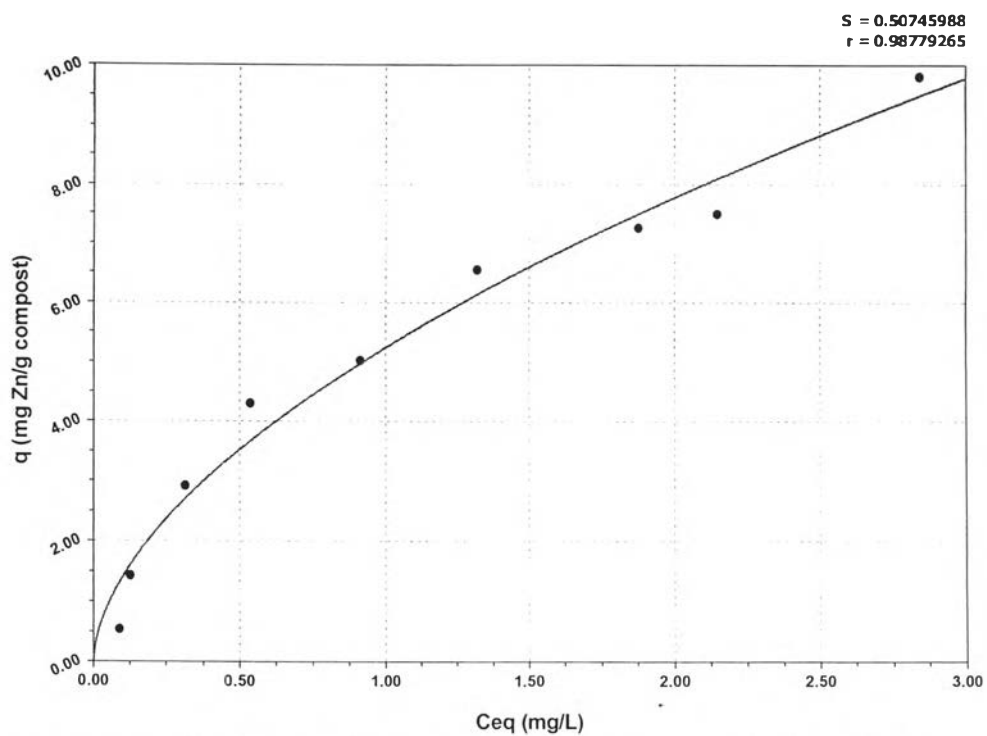


Figure E.11 The Zn Freundlich isotherm curve of the 50% MC/initial pH 5 compost

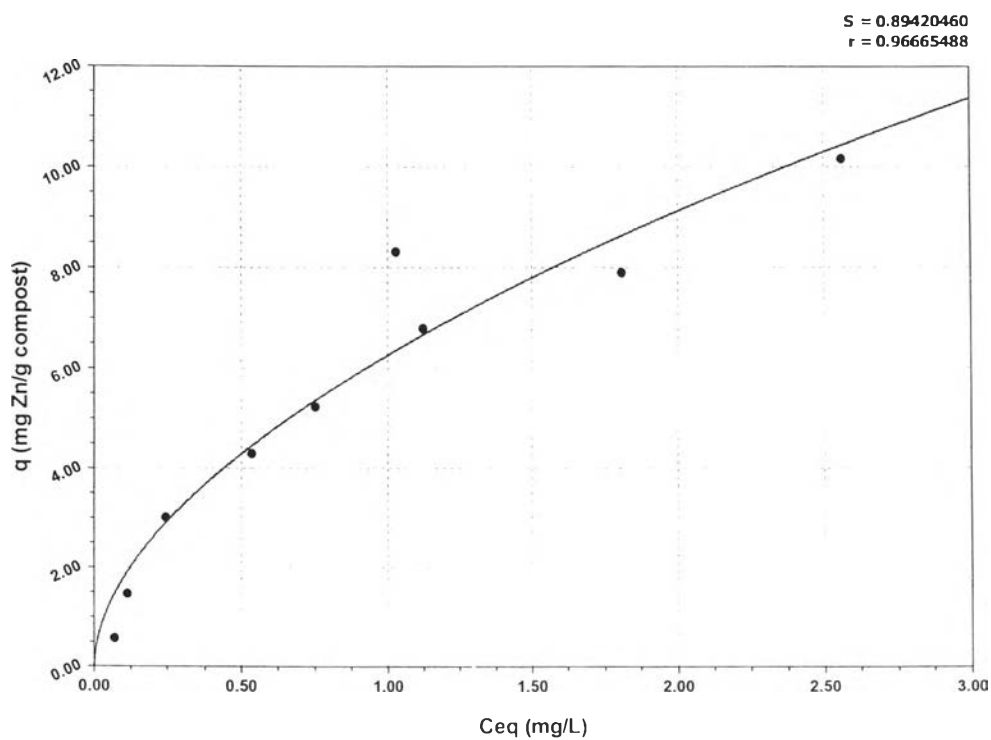


Figure E.12 The Zn Freundlich isotherm curve of the 50% MC/initial pH 6 compost

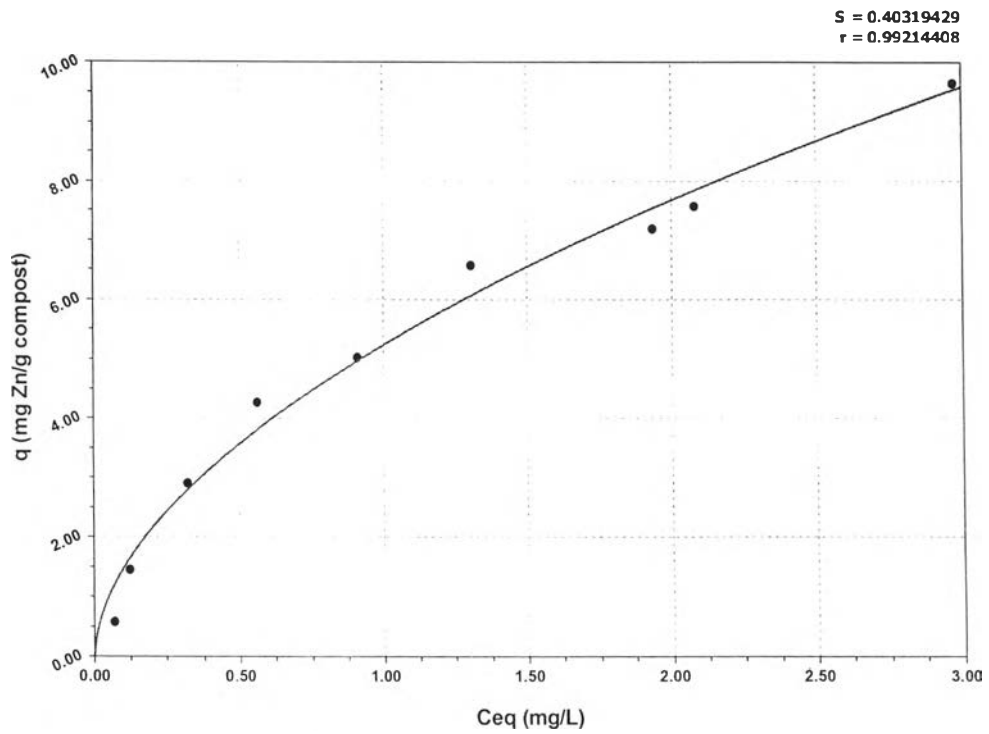


Figure E.13 The Zn Freundlich isotherm curve of the 50% MC/initial pH 7 compost

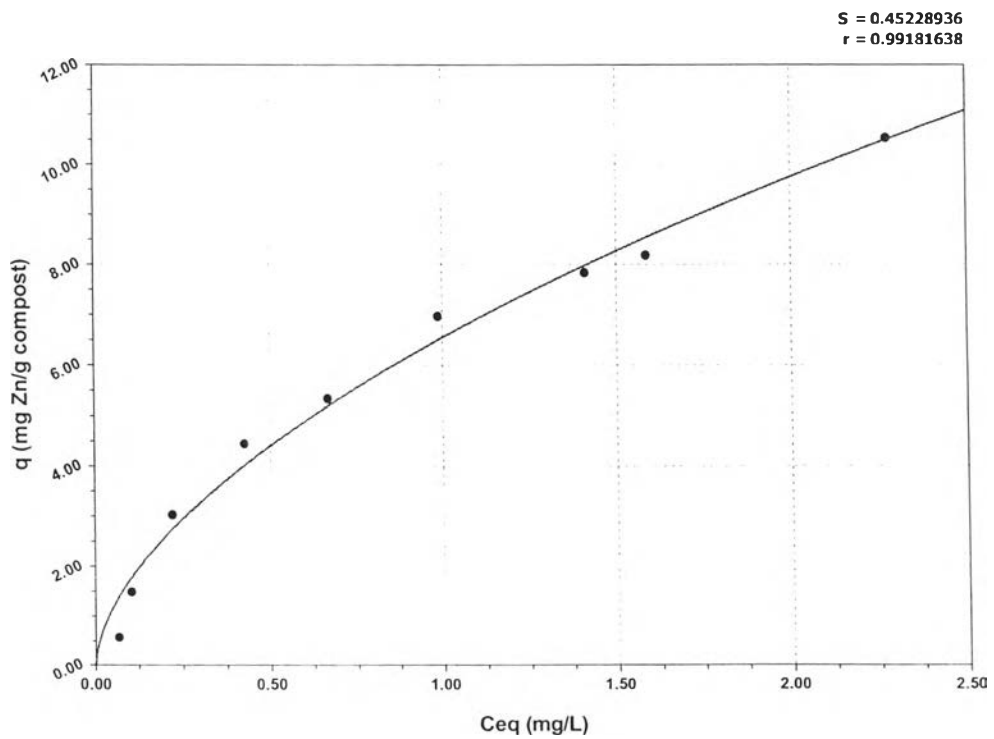


Figure E.14 The Zn Freundlich isotherm curve of the 50% MC/initial pH 8 compost

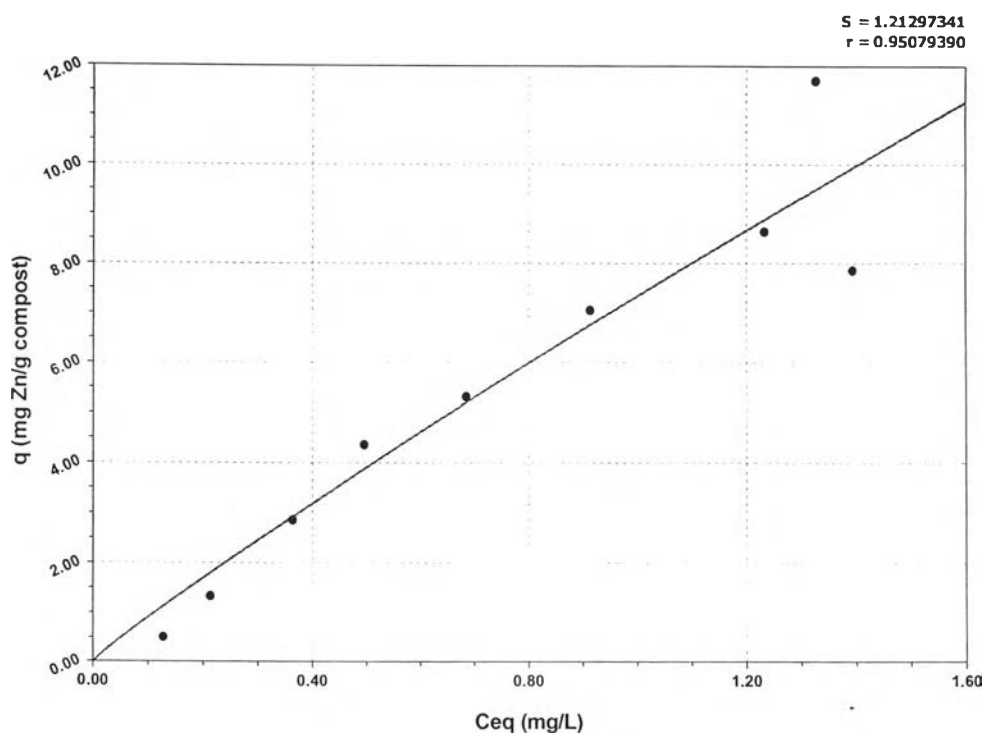


Figure E.15 The Zn Freundlich isotherm curve of the 50% MC/initial pH 9 compost

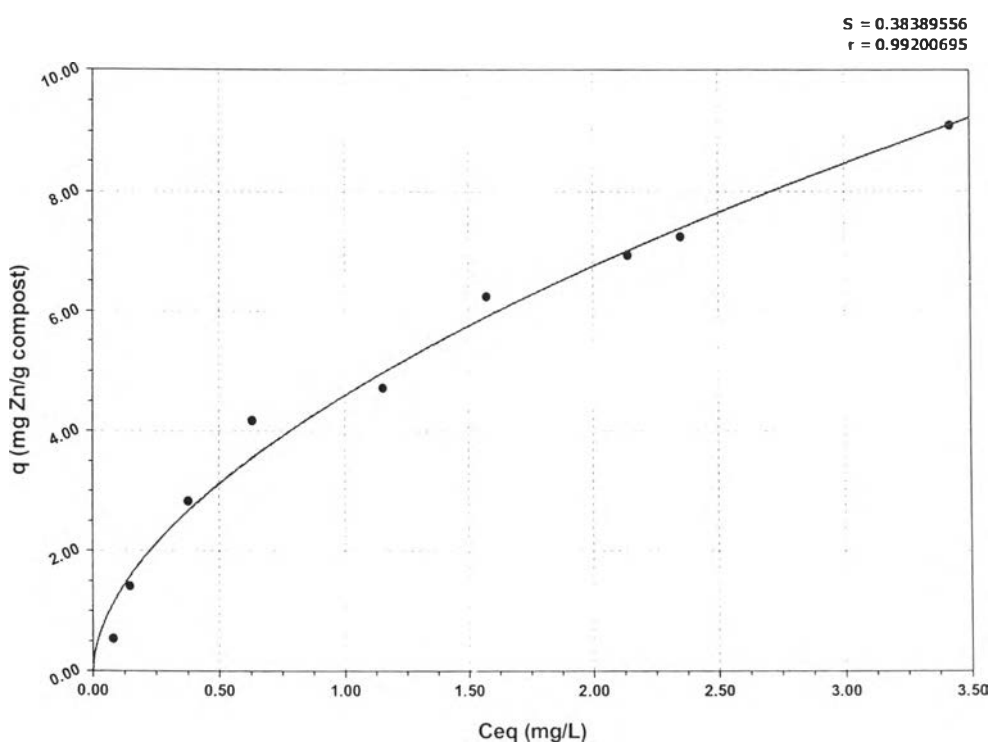


Figure E.16 The Zn Freundlich isotherm curve of the 60% MC/initial pH 5 compost

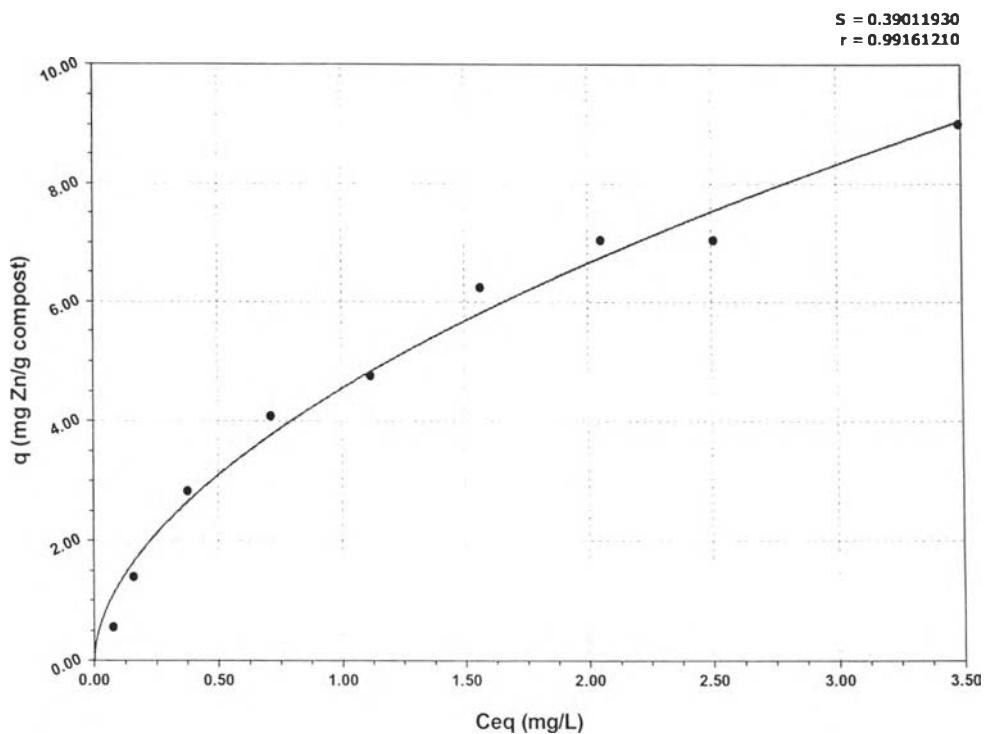


Figure E.17 The Zn Freundlich isotherm curve of the 60% MC/initial pH 6 compost

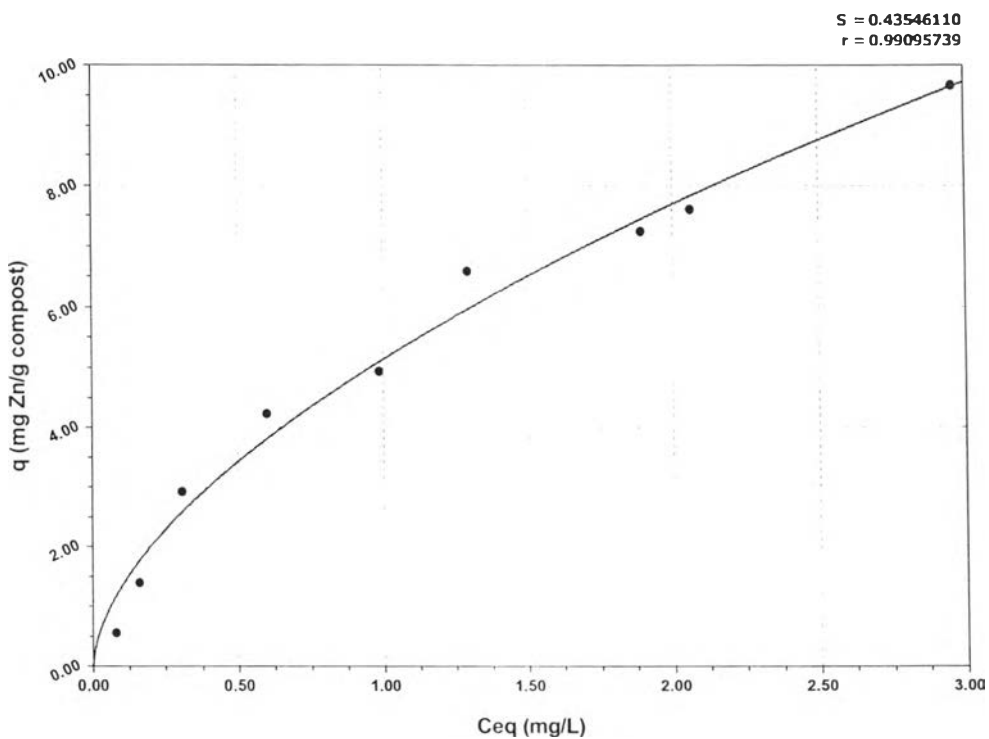


Figure E.18 The Zn Freundlich isotherm curve of the 60% MC/initial pH 7 compost

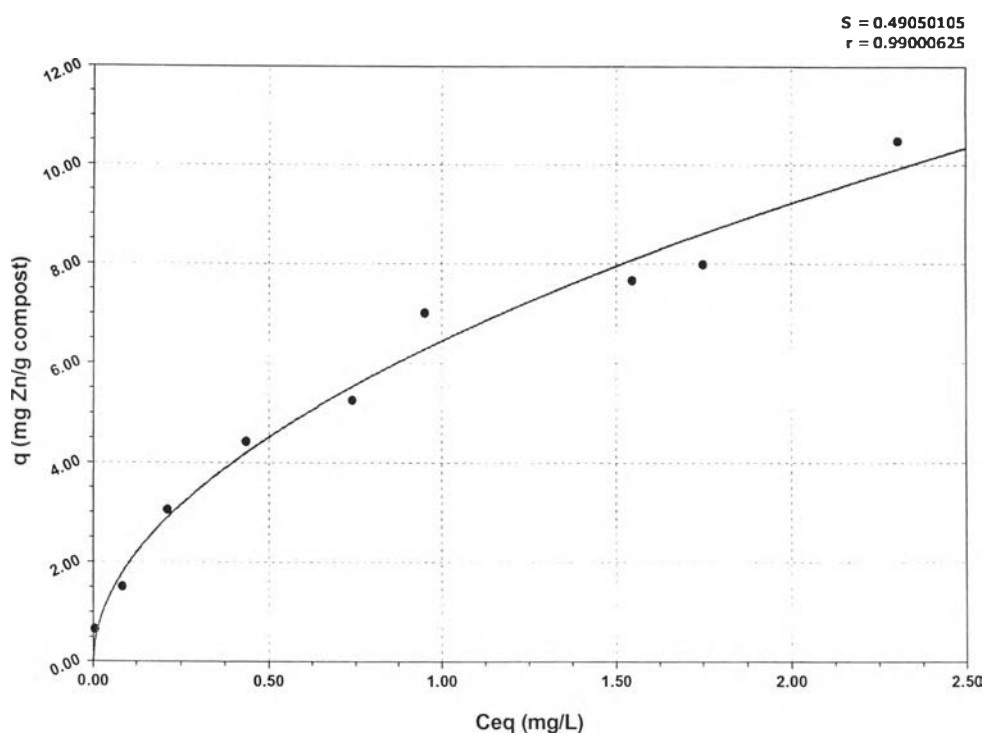


Figure E.19 The Zn Freundlich isotherm curve of the 60% MC/initial pH 8 compost

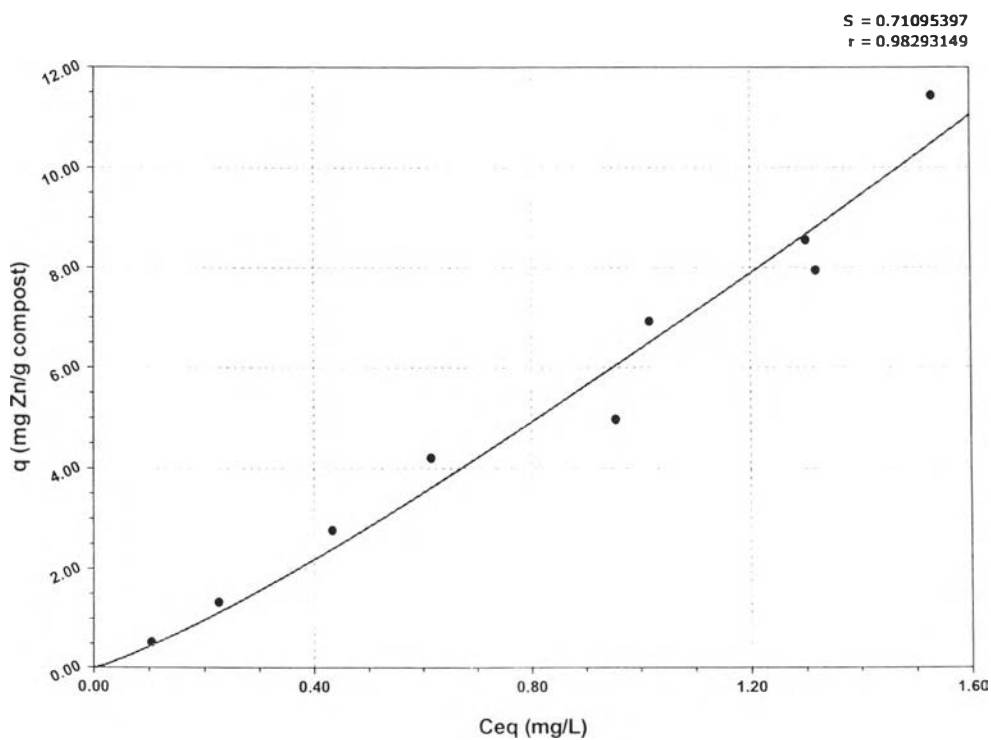


Figure E.20 The Zn Freundlich isotherm curve of the 60% MC/initial pH 9 compost

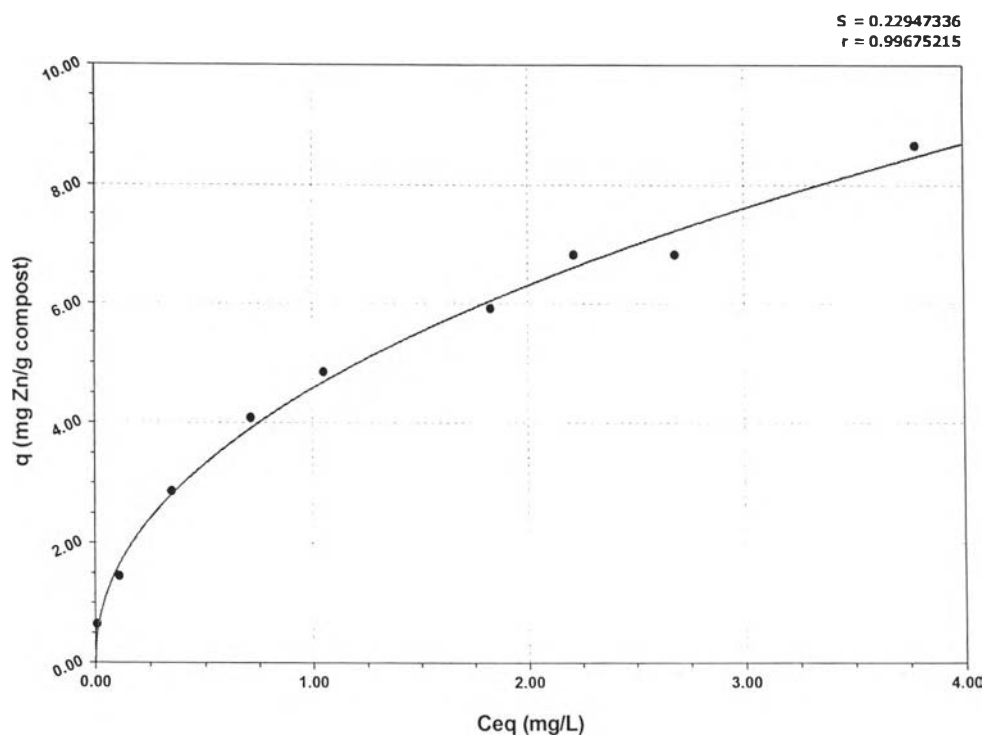


Figure E.21 The Zn Freundlich isotherm curve of the 70% MC/initial pH 5 compost

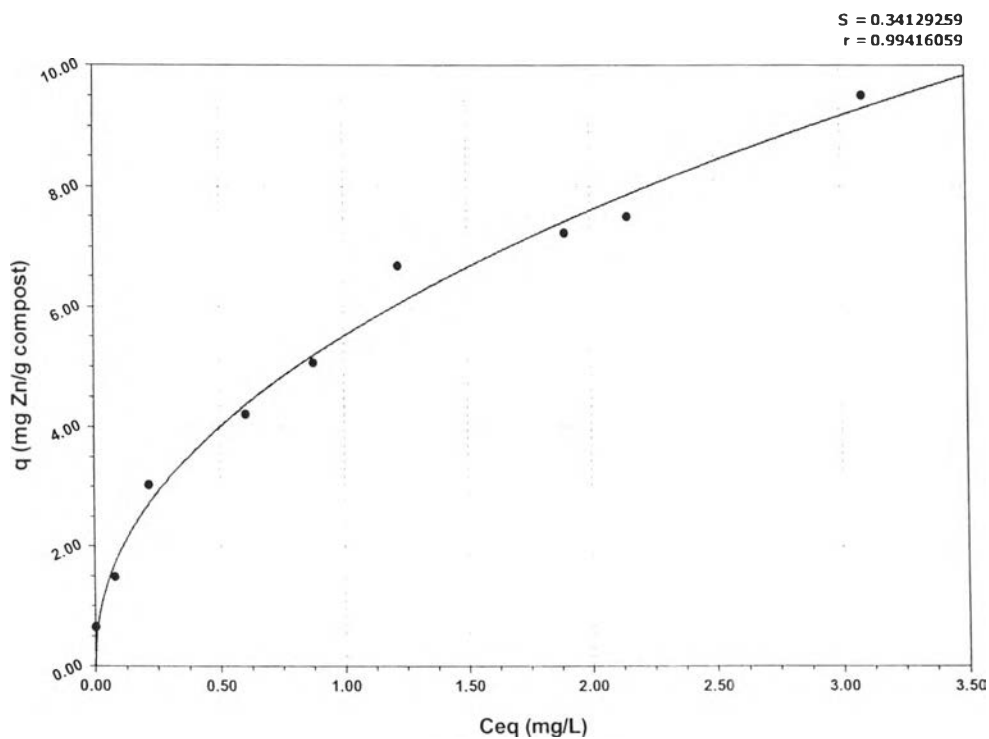


Figure E.22 The Zn Freundlich isotherm curve of the 70% MC/initial pH 6 compost

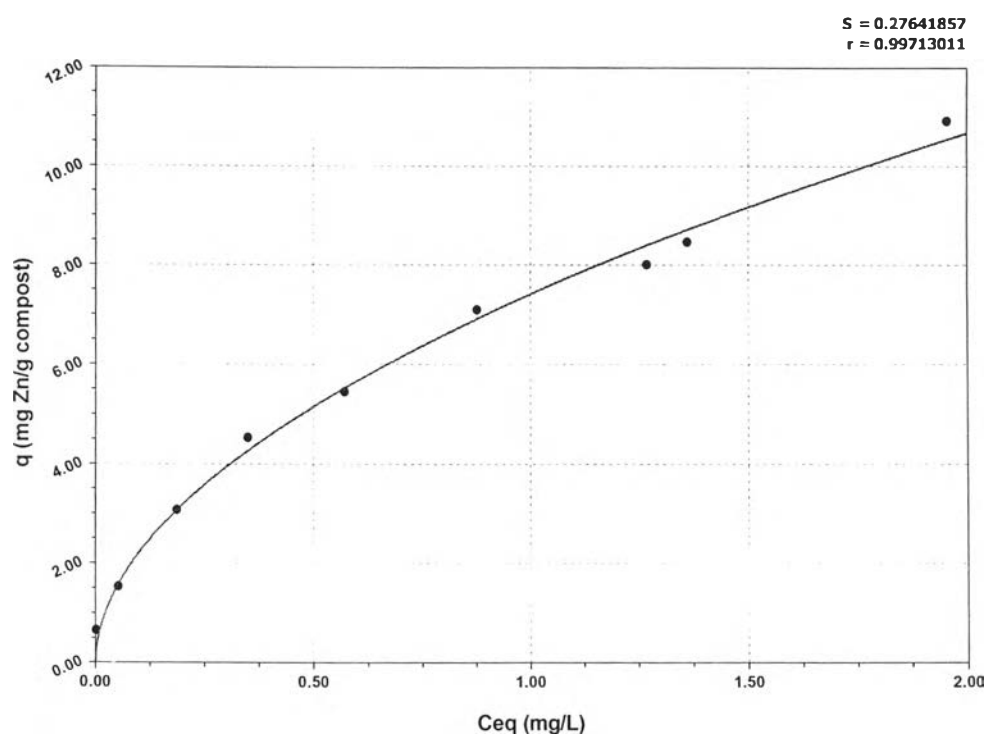


Figure E.23 The Zn Freundlich isotherm curve of the 70% MC/initial pH 7 compost

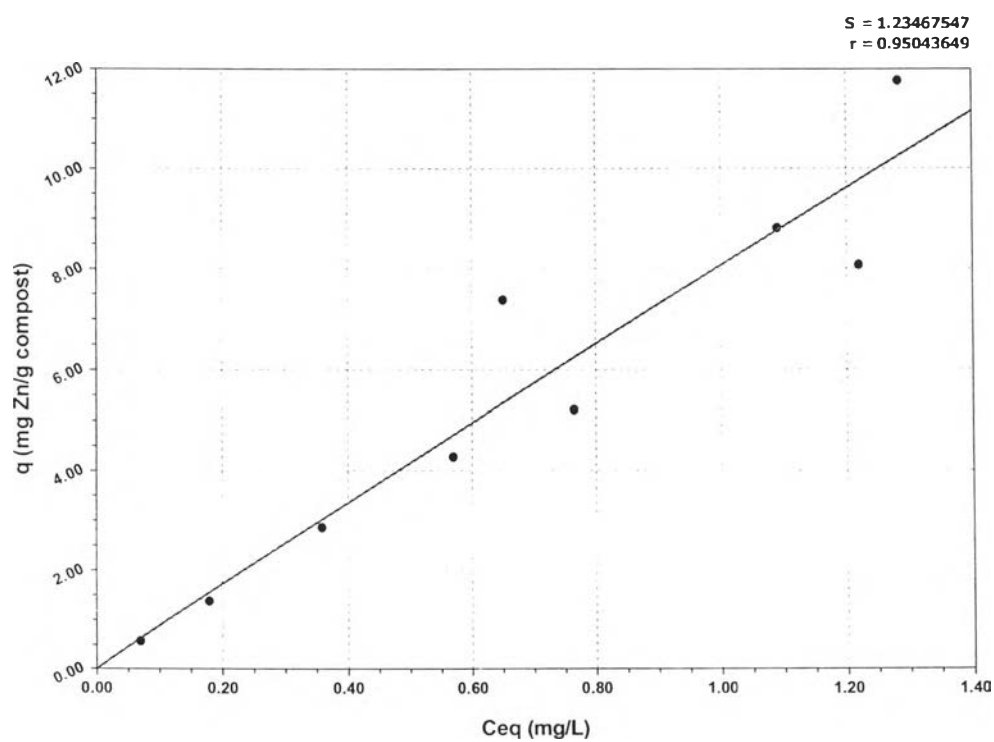


Figure E.24 The Zn Freundlich isotherm curve of the 70% MC/initial pH 8 compost

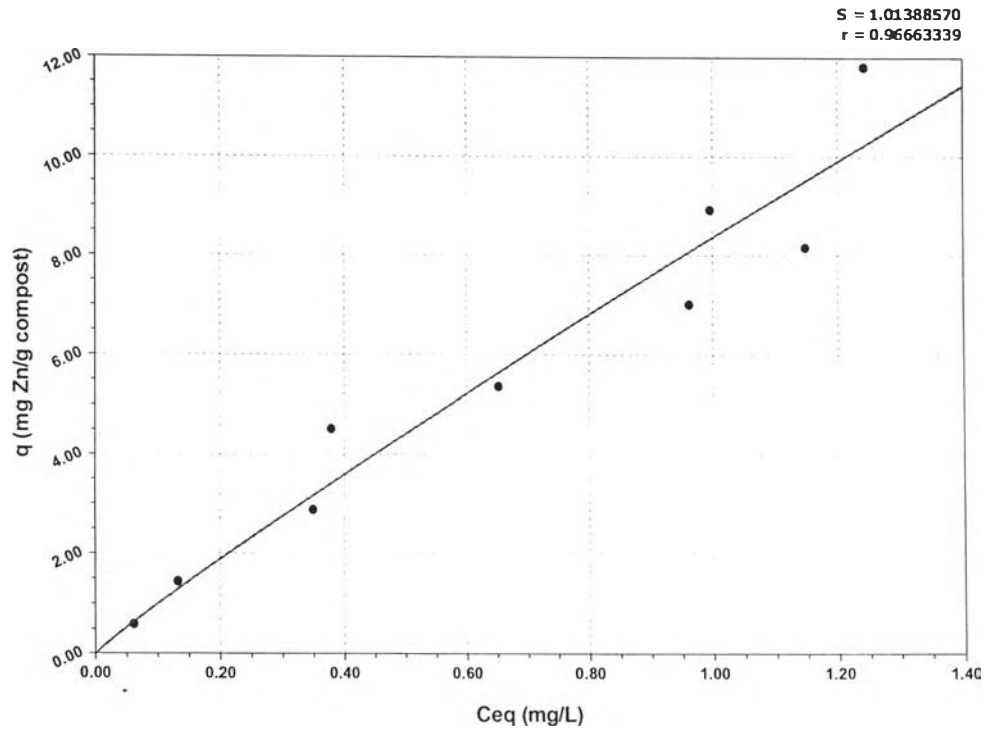


Figure E.25 The Zn Freundlich isotherm curve of the 70% MC/initial pH 9 compost

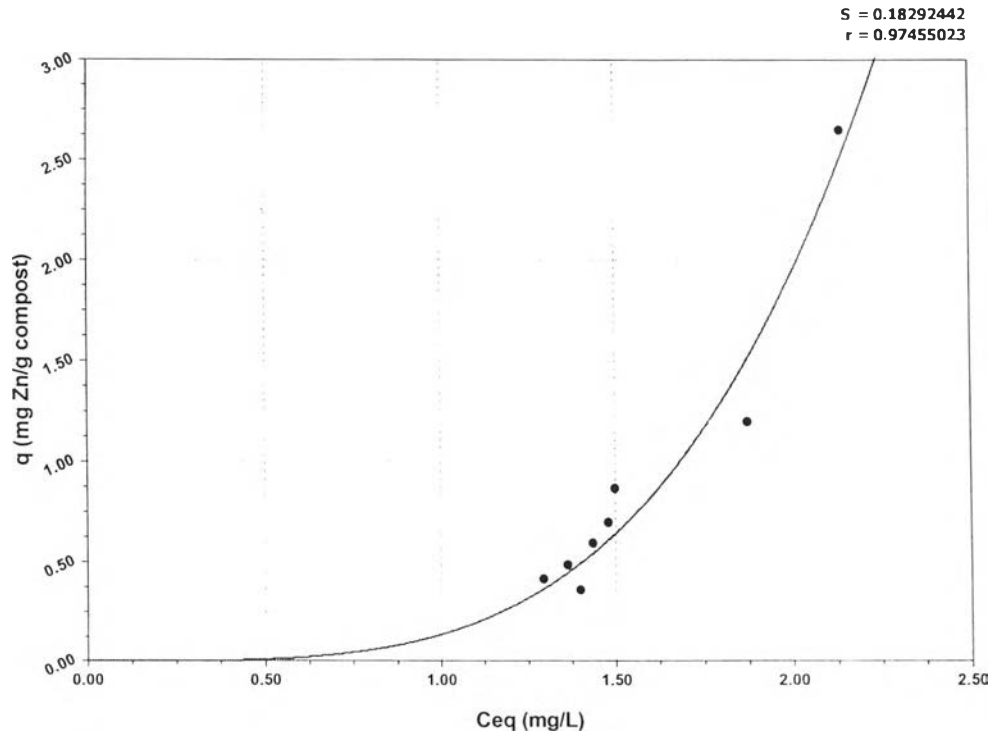


Figure E.26 The Zn Freundlich isotherm curve of the non-composted grass

Biography

Darin Ruangrote was born in Songkhla, Thailand, on June 14, 1980. She received her Bachelor Degree of Environmental Engineering from Chulalongkorn University in 2001. She began her M.S. study in Environmental Management (International Program), at the National Research Center for Environmental and Hazardous Waste Management, Chulalongkorn University in May 2002 and completed the program in May 2005.

