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APPENDIX

Table 1A. Details and results of each experiment.



Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (oC)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
1	Phenyl.oxide	alumina	0.3	20	30	400	60	541.8
2	Phenyl.oxide	alumina	0.4	20	30	400	60	240
3	Phenyl.oxide	alumina	0.5	20	30	400	60	119
4	Phenyl.oxide	alumina	0.6	20	30	400	60	42.4
5	Phenyl.oxide	alumina	1	20	30	400	60	0
6	Arsenic oxide	alumina	0.01	20	30	400	60	2550
7	Arsenic oxide	alumina	0.02	20	30	400	60	1777.5
8	Arsenic oxide	alumina	0.03	20	30	400	60	400
9	Arsenic oxide	alumina	0.04	20	30	400	60	142.8
10	Arsenic oxide	alumina	0.05	20	30	400	60	52.4
11	Arsenic oxide	alumina	0.1	20	30	400	60	5.2
12	Phenyl.oxide	alumina	0.5	20	30	400	15	185
13	Phenyl.oxide	alumina	0.5	20	30	400	30	128
14	Phenyl.oxide	alumina	0.5	20	30	400	45	110
15	Phenyl.oxide	alumina	0.5	20	30	400	60	104
16	Phenyl.oxide	alumina	0.5	20	30	400	90	97
17	Phenyl.oxide	alumina	0.5	20	30	400	120	94
18	Arsenic oxide	alumina	0.03	20	30	400	15	384
19	Arsenic oxide	alumina	0.03	20	30	400	30	335
20	Arsenic oxide	alumina	0.03	20	30	400	45	324
21	Arsenic oxide	alumina	0.03	20	30	400	60	320.8
22	Arsenic oxide	alumina	0.03	20	30	400	90	318.4
23	Arsenic oxide	alumina	0.03	20	30	400	120	311.2
24	Phenyl.oxide	alumina	0.5	50	30	400	60	410.4
25	Phenyl.oxide	alumina	0.5	50	30	400	60	1367
26	Phenyl.oxide	alumina	0.5	50	30	400	60	4175
27	Phenyl.oxide	alumina	0.5	50	30	400	60	7193
28	Phenyl.oxide	alumina	0.5	50	30	400	60	10152

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
29	Phenyl.oxide	-	-	20	30	200	60	19.9 (ppm)
30	Phenyl.oxide	-	-	20	30	400	60	19.93 (ppm)
31	Phenyl.oxide	-	-	20	30	600	60	19.95 (ppm)
32	Phenyl.oxide	-	-	20	50	400	60	19.96 (ppm)
33	Phenyl.oxide	-	-	20	75	400	60	20 (ppm)
34	Arsenic oxide	-	-	10	30	200	60	9.93 (ppm)
35	Arsenic oxide	-	-	10	30	400	60	9.95 (ppm)
36	Arsenic oxide	-	-	10	30	600	60	9.94 (ppm)
37	Arsenic oxide	-	-	10	50	400	60	9.91 (ppm)
38	Arsenic oxide	-	-	10	75	400	60	9.95 (ppm)
39	Phenyl.oxide	alumina	0.5	20	30	400	60	82
40	Phenyl.oxide	alumina	0.5	20	30	400	60	97.2
41	Phenyl.oxide	alumina	0.5	20	30	400	60	76.6
42	Phenyl.oxide	alumina	0.5	20	30	400	60	95.6
43	Phenyl.oxide	alumina	0.5	20	30	400	60	107.3
44	Phenyl.oxide	alumina	0.5	20	30	400	60	109.4
45	Phenyl.oxide	alumina	0.5	20	30	400	60	109.1
46	Phenyl.oxide	alumina	0.5	20	30	400	60	101.4
47	Phenyl.oxide	alumina	0.5	20	50	400	60	53.2
48	Phenyl.oxide	alumina	0.5	20	50	400	60	47.8
49	Phenyl.oxide	alumina	0.5	20	50	400	60	44.6
50	Phenyl.oxide	alumina	0.5	20	50	400	60	51.6
51	Phenyl.oxide	alumina	0.5	20	50	400	60	51.6
52	Phenyl.oxide	alumina	0.5	20	50	400	60	57.8
53	Phenyl.oxide	alumina	0.5	20	50	400	60	46.8
54	Phenyl.oxide	alumina	0.5	20	50	400	60	47.8
55	Phenyl.oxide	alumina	0.5	20	75	400	60	31.2
56	Phenyl.oxide	alumina	0.5	20	75	400	60	37.8
57	Phenyl.oxide	alumina	0.5	20	75	400	60	37
58	Phenyl.oxide	alumina	0.5	20	75	400	60	31
59	Phenyl.oxide	alumina	0.5	20	75	400	60	20
60	Phenyl.oxide	alumina	0.5	20	75	400	60	17

Table 1A.(continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic(ppb)
61	Phenyl.oxide	alumina	0.5	20	75	400	60	29.3
62	Phenyl.oxide	alumina	0.5	20	75	400	60	20.8
63	Arsenic oxide	alumina	0.03	10	30	400	60	384.6
64	Arsenic oxide	alumina	0.03	10	30	400	60	393
65	Arsenic oxide	alumina	0.03	10	30	400	60	371.8
66	Arsenic oxide	alumina	0.03	10	30	400	60	373.9
67	Arsenic oxide	alumina	0.03	10	30	400	60	386.1
68	Arsenic oxide	alumina	0.03	10	30	400	60	407.7
69	Arsenic oxide	alumina	0.03	10	30	400	60	356.4
70	Arsenic oxide	alumina	0.03	10	30	400	60	358.2
71	Arsenic oxide	alumina	0.03	10	50	400	60	268
72	Arsenic oxide	alumina	0.03	10	50	400	60	286.8
73	Arsenic oxide	alumina	0.03	10	50	400	60	289.2
74	Arsenic oxide	alumina	0.03	10	50	400	60	271.2
75	Arsenic oxide	alumina	0.03	10	50	400	60	311.4
76	Arsenic oxide	alumina	0.03	10	50	400	60	253.8
77	Arsenic oxide	alumina	0.03	10	50	400	60	276.6
78	Arsenic oxide	alumina	0.03	10	50	400	60	278.4
79	Arsenic oxide	alumina	0.03	10	75	400	60	134.4
80	Arsenic oxide	alumina	0.03	10	75	400	60	138.2
81	Arsenic oxide	alumina	0.03	10	75	400	60	126.4
82	Arsenic oxide	alumina	0.03	10	75	400	60	128.6
83	Arsenic oxide	alumina	0.03	10	75	400	60	150
84	Arsenic oxide	alumina	0.03	10	75	400	60	141.2
85	Arsenic oxide	alumina	0.03	10	75	400	60	140.5
86	Arsenic oxide	alumina	0.03	10	75	400	60	136.8
87	Phenyl.oxide	alumina	0.5	20	30	200	60	97.4
88	Phenyl.oxide	alumina	0.5	20	30	400	60	97.2
89	Phenyl.oxide	alumina	0.5	20	30	600	60	104.2
90	Phenyl.oxide	alumina	0.5	20	50	200	60	43.8

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
91	Phenyl.oxide	alumina	0.5	20	50	400	60	53.2
92	Phenyl.oxide	alumina	0.5	20	50	600	60	51.8
93	Phenyl.oxide	alumina	0.5	20	75	200	60	43.8
94	Phenyl.oxide	alumina	0.5	20	75	400	60	41.2
95	Phenyl.oxide	alumina	0.5	20	75	600	60	41.6
96	Arsenic oxide	alumina	0.03	10	30	200	60	378
97	Arsenic oxide	alumina	0.03	10	30	400	60	393
98	Arsenic oxide	alumina	0.03	10	30	600	60	384.6
99	Arsenic oxide	alumina	0.03	10	50	200	60	282
100	Arsenic oxide	alumina	0.03	10	50	400	60	268
101	Arsenic oxide	alumina	0.03	10	50	600	60	266.4
102	Arsenic oxide	alumina	0.03	10	75	200	60	134.4
103	Arsenic oxide	alumina	0.03	10	75	400	60	138.2
104	Arsenic oxide	alumina	0.03	10	75	600	60	153
105	Phenyl.oxide	2.5 Ni	0.5	20	30	200	60	60.8
106	Phenyl.oxide	2.5 Ni	0.5	20	30	400	60	62
107	Phenyl.oxide	2.5 Ni	0.5	20	30	600	60	71.6
108	Phenyl.oxide	2.5 Ni	0.5	20	50	200	60	38
109	Phenyl.oxide	2.5 Ni	0.5	20	50	400	60	42.6
110	Phenyl.oxide	2.5 Ni	0.5	20	50	600	60	43.2
111	Phenyl.oxide	2.5 Ni	0.5	20	75	200	60	32.6
112	Phenyl.oxide	2.5 Ni	0.5	20	75	400	60	32
113	Phenyl.oxide	2.5 Ni	0.5	20	75	600	60	30.4
114	Arsenic oxide	2.5 Ni	0.03	10	30	200	60	261
115	Arsenic oxide	2.5 Ni	0.03	10	30	400	60	261.8
116	Arsenic oxide	2.5 Ni	0.03	10	30	600	60	267
117	Arsenic oxide	2.5 Ni	0.03	10	50	200	60	197.4
118	Arsenic oxide	2.5 Ni	0.03	10	50	400	60	185.8
119	Arsenic oxide	2.5 Ni	0.03	10	50	600	60	163.8
120	Arsenic oxide	2.5 Ni	0.03	10	75	200	60	89.4

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
121	Arsenic oxide	2.5 Ni	0.03	10	75	400	60	90
122	Arsenic oxide	2.5 Ni	0.03	10	75	600	60	32.5
123	Phenyl oxide	5 Ni	0.5	20	30	200	60	68
124	Phenyl oxide	5 Ni	0.5	20	30	400	60	74
125	Phenyl oxide	5 Ni	0.5	20	30	600	60	61.6
126	Phenyl oxide	5 Ni	0.5	20	50	200	60	49.4
127	Phenyl oxide	5 Ni	0.5	20	50	400	60	50.4
128	Phenyl oxide	5 Ni	0.5	20	50	600	60	50.6
129	Phenyl oxide	5 Ni	0.5	20	75	200	60	24.6
130	Phenyl oxide	5 Ni	0.5	20	75	400	60	25.8
131	Phenyl oxide	5 Ni	0.5	20	75	600	60	26.4
132	Arsenic oxide	5 Ni	0.03	10	30	200	60	257.6
133	Arsenic oxide	5 Ni	0.03	10	30	400	60	258.2
134	Arsenic oxide	5 Ni	0.03	10	30	600	60	267
135	Arsenic oxide	5 Ni	0.03	10	50	200	60	148
136	Arsenic oxide	5 Ni	0.03	10	50	400	60	152.6
137	Arsenic oxide	5 Ni	0.03	10	50	600	60	120.6
138	Arsenic oxide	5 Ni	0.03	10	75	200	60	99.8
139	Arsenic oxide	5 Ni	0.03	10	75	400	60	99.4
140	Arsenic oxide	5 Ni	0.03	10	75	600	60	96.4
141	Phenyl oxide	7.5 Ni	0.5	20	30	200	60	50.4
142	Phenyl oxide	7.5 Ni	0.5	20	30	400	60	55
143	Phenyl oxide	7.5 Ni	0.5	20	30	600	60	51.8
144	Phenyl oxide	7.5 Ni	0.5	20	50	200	60	30.6
145	Phenyl oxide	7.5 Ni	0.5	20	50	400	60	30.8
146	Phenyl oxide	7.5 Ni	0.5	20	50	600	60	33.8
147	Phenyl oxide	7.5 Ni	0.5	20	75	200	60	29.4
148	Phenyl oxide	7.5 Ni	0.5	20	75	400	60	27.8
149	Phenyl oxide	7.5 Ni	0.5	20	75	600	60	25.4
150	Arsenic oxide	7.5 Ni	0.03	10	30	200	60	278.4

Table 1A.(continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (oC)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
151	Arsenic oxide	7.5 Ni	0.03	10	30	400	60	303
152	Arsenic oxide	7.5 Ni	0.03	10	30	600	60	292.7
153	Arsenic oxide	7.5 Ni	0.03	10	50	200	60	163.6
154	Arsenic oxide	7.5 Ni	0.03	10	50	400	60	183.8
155	Arsenic oxide	7.5 Ni	0.03	10	50	600	60	178.2
156	Arsenic oxide	7.5 Ni	0.03	10	75	200	60	115
157	Arsenic oxide	7.5 Ni	0.03	10	75	400	60	121.2
158	Arsenic oxide	7.5 Ni	0.03	10	75	600	60	122.6
159	Phenyl.oxide	10 Ni	0.5	20	30	200	60	32.4
160	Phenyl.oxide	10 Ni	0.5	20	30	400	60	32
161	Phenyl.oxide	10 Ni	0.5	20	30	600	60	30.4
162	Phenyl.oxide	10 Ni	0.5	20	50	200	60	29.4
163	Phenyl.oxide	10 Ni	0.5	20	50	400	60	35.2
164	Phenyl.oxide	10 Ni	0.5	20	50	600	60	30.4
165	Phenyl.oxide	10 Ni	0.5	20	75	200	60	14.6
166	Phenyl.oxide	10 Ni	0.5	20	75	400	60	14.2
167	Phenyl.oxide	10 Ni	0.5	20	75	600	60	17
168	Arsenic oxide	10 Ni	0.03	10	30	200	60	295.5
169	Arsenic oxide	10 Ni	0.03	10	30	400	60	222
170	Arsenic oxide	10 Ni	0.03	10	30	600	60	226
171	Arsenic oxide	10 Ni	0.03	10	50	200	60	199.2
172	Arsenic oxide	10 Ni	0.03	10	50	400	60	197.2
173	Arsenic oxide	10 Ni	0.03	10	50	600	60	202.2
174	Arsenic oxide	10 Ni	0.03	10	75	200	60	125
175	Arsenic oxide	10 Ni	0.03	10	75	400	60	125.8
176	Arsenic oxide	10 Ni	0.03	10	75	600	60	124.8
177	Phenyl.oxide	2.5 Mo	0.5	20	30	200	60	856.8
178	Phenyl.oxide	2.5 Mo	0.5	20	30	400	60	860
179	Phenyl.oxide	2.5 Mo	0.5	20	30	600	60	907.2
180	Phenyl.oxide	2.5 Mo	0.5	20	50	200	60	518.4

Table 1A. (continue) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
181	Phenyl.oxide	2.5 Mo	0.5	20	50	400	60	520
182	Phenyl.oxide	2.5 Mo	0.5	20	50	600	60	511.2
183	Phenyl.oxide	2.5 Mo	0.5	20	75	200	60	265.6
184	Phenyl.oxide	2.5 Mo	0.5	20	75	400	60	270
185	Phenyl.oxide	2.5 Mo	0.5	20	75	600	60	272
186	Arsenic oxide	2.5 Mo	0.03	10	30	200	60	1405
187	Arsenic oxide	2.5 Mo	0.03	10	30	400	60	1435
188	Arsenic oxide	2.5 Mo	0.03	10	30	600	60	1414
189	Arsenic oxide	2.5 Mo	0.03	10	50	200	60	533
190	Arsenic oxide	2.5 Mo	0.03	10	50	400	60	500
191	Arsenic oxide	2.5 Mo	0.03	10	50	600	60	511
192	Arsenic oxide	2.5 Mo	0.03	10	75	200	60	339.6
193	Arsenic oxide	2.5 Mo	0.03	10	75	400	60	324
194	Arsenic oxide	2.5 Mo	0.03	10	75	600	60	328.4
195	Phenyl.oxide	5 Mo	0.5	20	30	200	60	2200
196	Phenyl.oxide	5 Mo	0.5	20	30	400	60	2242
197	Phenyl.oxide	5 Mo	0.5	20	30	600	60	2308
198	Phenyl.oxide	5 Mo	0.5	20	50	200	60	1564
199	Phenyl.oxide	5 Mo	0.5	20	50	400	60	1600
200	Phenyl.oxide	5 Mo	0.5	20	50	600	60	1635
201	Phenyl.oxide	5 Mo	0.5	20	75	200	60	1110
202	Phenyl.oxide	5 Mo	0.5	20	75	400	60	1040
203	Phenyl.oxide	5 Mo	0.5	20	75	600	60	939
204	Arsenic oxide	5 Mo	0.03	10	30	200	60	1804
205	Arsenic oxide	5 Mo	0.03	10	30	400	60	1812
206	Arsenic oxide	5 Mo	0.03	10	30	600	60	1811
207	Arsenic oxide	5 Mo	0.03	10	50	200	60	1725
208	Arsenic oxide	5 Mo	0.03	10	50	400	60	1720
209	Arsenic oxide	5 Mo	0.03	10	50	600	60	1735
210	Arsenic oxide	5 Mo	0.03	10	75	200	60	868.8

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (cC)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
211	Arsenic oxide	5 Mo	0.03	10	75	400	60	860
212	Arsenic oxide	5 Mo	0.03	10	75	600	60	965.4
213	Phenyl.oxide	7.5 Mo	0.5	20	30	200	60	3949
214	Phenyl.oxide	7.5 Mo	0.5	20	30	400	60	3930
215	Phenyl.oxide	7.5 Mo	0.5	20	30	600	60	4018
216	Phenyl.oxide	7.5 Mo	0.5	20	50	200	60	3441
217	Phenyl.oxide	7.5 Mo	0.5	20	50	400	60	3420
218	Phenyl.oxide	7.5 Mo	0.5	20	50	600	60	3153
219	Phenyl.oxide	7.5 Mo	0.5	20	75	200	60	2087
220	Phenyl.oxide	7.5 Mo	0.5	20	75	400	60	1887
221	Phenyl.oxide	7.5 Mo	0.5	20	75	600	60	2030
222	Arsenic oxide	7.5 Mo	0.03	10	30	200	60	4840
223	Arsenic oxide	7.5 Mo	0.03	10	30	400	60	4880
224	Arsenic oxide	7.5 Mo	0.03	10	30	600	60	4780
225	Arsenic oxide	7.5 Mo	0.03	10	50	200	60	2500
226	Arsenic oxide	7.5 Mo	0.03	10	50	400	60	2610
227	Arsenic oxide	7.5 Mo	0.03	10	50	600	60	2546
228	Arsenic oxide	7.5 Mo	0.03	10	75	200	60	1150
229	Arsenic oxide	7.5 Mo	0.03	10	75	400	60	1060
230	Arsenic oxide	7.5 Mo	0.03	10	75	600	60	1105
231	Phenyl.oxide	10 Mo	0.5	20	30	200	60	4909
232	Phenyl.oxide	10 Mo	0.5	20	30	400	60	5056
233	Phenyl.oxide	10 Mo	0.5	20	30	600	60	4998
234	Phenyl.oxide	10 Mo	0.5	20	50	200	60	4094
235	Phenyl.oxide	10 Mo	0.5	20	50	400	60	4410
236	Phenyl.oxide	10 Mo	0.5	20	50	600	60	4449
237	Phenyl.oxide	10 Mo	0.5	20	75	200	60	2600
238	Phenyl.oxide	10 Mo	0.5	20	75	400	60	2628
239	Phenyl.oxide	10 Mo	0.5	20	75	600	60	2577
240	Arsenic oxide	10 Mo	0.03	10	30	200	60	5960

Table 1A. (continued) Details and results of each experiment.



Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (oC)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
241	Arsenic oxide	10 Mo	0.03	10	30	400	60	6080
242	Arsenic oxide	10 Mo	0.03	10	30	600	60	5860
243	Arsenic oxide	10 Mo	0.03	10	50	200	60	3166
244	Arsenic oxide	10 Mo	0.03	10	50	400	60	3130
245	Arsenic oxide	10 Mo	0.03	10	50	600	60	3116
246	Arsenic oxide	10 Mo	0.03	10	75	200	60	1510
247	Arsenic oxide	10 Mo	0.03	10	75	400	60	1480
248	Arsenic oxide	10 Mo	0.03	10	75	600	60	1575
249	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	30	200	60	54.1
250	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	30	400	60	53
251	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	30	600	60	52.7
252	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	50	200	60	42.9
253	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	50	400	60	43
254	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	50	600	60	44
255	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	75	200	60	31.6
256	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	75	400	60	27.8
257	Phenyl.oxide	2.5-7.5 MoNi	0.5	20	75	600	60	26.7
258	Arsenic oxide	2.5-7.5 MoNi	0.03	10	30	200	60	108.2
259	Arsenic oxide	2.5-7.5 MoNi	0.03	10	30	400	60	106
260	Arsenic oxide	2.5-7.5 MoNi	0.03	10	30	600	60	105.4
261	Arsenic oxide	2.5-7.5 MoNi	0.03	10	50	200	60	85.8
262	Arsenic oxide	2.5-7.5 MoNi	0.03	10	50	400	60	86
263	Arsenic oxide	2.5-7.5 MoNi	0.03	10	50	600	60	88
264	Arsenic oxide	2.5-7.5 MoNi	0.03	10	75	200	60	63.2
265	Arsenic oxide	2.5-7.5 MoNi	0.03	10	75	400	60	55.6
266	Arsenic oxide	2.5-7.5 MoNi	0.03	10	75	600	60	53.4
267	Phenyl.oxide	5-5 MoNi	0.5	20	30	200	60	250.2
268	Phenyl.oxide	5-5 MoNi	0.5	20	30	400	60	267
269	Phenyl.oxide	5-5 MoNi	0.5	20	30	600	60	260.4
270	Phenyl.oxide	5-5 MoNi	0.5	20	50	200	60	177

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
271	Phenyl.oxide	5-5 MoNi	0.5	20	50	400	60	172.2
272	Phenyl.oxide	5-5 MoNi	0.5	20	50	600	60	160.2
273	Phenyl.oxide	5-5 MoNi	0.5	20	75	200	60	115.8
274	Phenyl.oxide	5-5 MoNi	0.5	20	75	400	60	96.6
275	Phenyl.oxide	5-5 MoNi	0.5	20	75	600	60	102.6
276	Arsenic oxide	5-5 MoNi	0.03	10	30	200	60	500.4
277	Arsenic oxide	5-5 MoNi	0.03	10	30	400	60	334
278	Arsenic oxide	5-5 MoNi	0.03	10	30	600	60	520.8
279	Arsenic oxide	5-5 MoNi	0.03	10	50	200	60	354
280	Arsenic oxide	5-5 MoNi	0.03	10	50	400	60	344
281	Arsenic oxide	5-5 MoNi	0.03	10	50	600	60	320
282	Arsenic oxide	5-5 MoNi	0.03	10	75	200	60	230.6
283	Arsenic oxide	5-5 MoNi	0.03	10	75	400	60	197.2
284	Arsenic oxide	5-5 MoNi	0.03	10	75	600	60	205.2
285	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	30	200	60	309.6
286	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	30	400	60	321.6
287	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	30	600	60	318
288	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	50	200	60	250.2
289	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	50	400	60	232.2
290	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	50	600	60	234.6
291	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	75	200	60	220
292	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	75	400	60	212.8
293	Phenyl.oxide	7.5-2.5 MoNi	0.5	20	75	600	60	215
294	Arsenic oxide	7.5-2.5 MoNi	0.03	10	30	200	60	619
295	Arsenic oxide	7.5-2.5 MoNi	0.03	10	30	400	60	634
296	Arsenic oxide	7.5-2.5 MoNi	0.03	10	30	600	60	636
297	Arsenic oxide	7.5-2.5 MoNi	0.03	10	50	200	60	500.4
298	Arsenic oxide	7.5-2.5 MoNi	0.03	10	50	400	60	464.4
299	Arsenic oxide	7.5-2.5 MoNi	0.03	10	50	600	60	469.2
300	Arsenic oxide	7.5-2.5 MoNi	0.03	10	75	200	60	440

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
301	Arsenic oxide	7.5-2.5 MoNi	0.03	10	75	400	60	425.6
302	Arsenic oxide	7.5-2.5 MoNi	0.03	10	75	600	60	440
303	Phenyl oxide	2.5-7.5 NiMo	0.5	20	30	200	60	1357
304	Phenyl oxide	2.5-7.5 NiMo	0.5	20	30	400	60	1360
305	Phenyl oxide	2.5-7.5 NiMo	0.5	20	30	600	60	1416
306	Phenyl oxide	2.5-7.5 NiMo	0.5	20	50	200	60	1090
307	Phenyl oxide	2.5-7.5 NiMo	0.5	20	50	400	60	1042
308	Phenyl oxide	2.5-7.5 NiMo	0.5	20	50	600	60	1145
309	Phenyl oxide	2.5-7.5 NiMo	0.5	20	75	200	60	713
310	Phenyl oxide	2.5-7.5 NiMo	0.5	20	75	400	60	960
311	Phenyl oxide	2.5-7.5 NiMo	0.5	20	75	600	60	760
312	Arsenic oxide	2.5-7.5 NiMo	0.03	10	50	200	60	3120
313	Arsenic oxide	2.5-7.5 NiMo	0.03	10	30	400	60	3016
314	Arsenic oxide	2.5-7.5 NiMo	0.03	10	50	600	60	3240
315	Arsenic oxide	2.5-7.5 NiMo	0.03	10	50	200	60	2640
316	Arsenic oxide	2.5-7.5 NiMo	0.03	10	50	400	60	2410
317	Arsenic oxide	2.5-7.5 NiMo	0.03	10	50	600	60	2416
318	Arsenic oxide	2.5-7.5 NiMo	0.03	10	75	200	60	896
319	Arsenic oxide	2.5-7.5 NiMo	0.03	10	75	400	60	976
320	Arsenic oxide	2.5-7.5 NiMo	0.03	10	75	600	60	1000
321	Phenyl oxide	5-5 NiMo	0.5	20	30	200	60	505
322	Phenyl oxide	5-5 NiMo	0.5	20	30	400	60	592
323	Phenyl oxide	5-5 NiMo	0.5	20	30	600	60	442
324	Phenyl oxide	5-5 NiMo	0.5	20	50	200	60	300
325	Phenyl oxide	5-5 NiMo	0.5	20	50	400	60	311.4
326	Phenyl oxide	5-5 NiMo	0.5	20	50	600	60	325.8
327	Phenyl oxide	5-5 NiMo	0.5	20	75	200	60	208
328	Phenyl oxide	5-5 NiMo	0.5	20	75	400	60	216
329	Phenyl oxide	5-5 NiMo	0.5	20	75	600	60	240
330	Arsenic oxide	5-5 NiMo	0.03	10	30	200	60	1860

Table 1A. (continued) Details and results of each experiment.

Exp. number	Type of Arsenic	Type of Adsorb.	Adsorb. weight	Initial conc. (ppm)	Temp. (°C)	Press. (psig)	Time (min)	Remaining arsenic (ppb)
331	Arsenic oxide	5-5 NiMo	0.03	10	30	400	60	1900
332	Arsenic oxide	5-5 NiMo	0.03	10	30	600	60	1890
333	Arsenic oxide	5-5 NiMo	0.03	10	50	200	60	1645
334	Arsenic oxide	5-5 NiMo	0.03	10	50	400	60	1635
335	Arsenic oxide	5-5 NiMo	0.03	10	50	600	60	1655
336	Arsenic oxide	5-5 NiMo	0.03	10	75	200	60	459
337	Arsenic oxide	5-5 NiMo	0.03	10	75	400	60	487
338	Arsenic oxide	5-5 NiMo	0.03	10	75	600	60	466.8
339	Phenyl oxide	7.5-2.5 NiMo	0.5	20	30	200	60	47.4
340	Phenyl oxide	7.5-2.5 NiMo	0.5	20	30	400	60	48
341	Phenyl oxide	7.5-2.5 NiMo	0.5	20	30	600	60	49.2
342	Phenyl oxide	7.5-2.5 NiMo	0.5	20	50	200	60	38.2
343	Phenyl oxide	7.5-2.5 NiMo	0.5	20	50	400	60	38
344	Phenyl oxide	7.5-2.5 NiMo	0.5	20	50	600	60	38.6
345	Phenyl oxide	7.5-2.5 NiMo	0.5	20	75	200	60	37.2
346	Phenyl oxide	7.5-2.5 NiMo	0.5	20	75	400	60	34.4
347	Phenyl oxide	7.5-2.5 NiMo	0.5	20	75	600	60	34
348	Arsenic oxide	7.5-2.5 NiMo	0.03	10	30	200	60	990
349	Arsenic oxide	7.5-2.5 NiMo	0.03	10	30	400	60	1010
350	Arsenic oxide	7.5-2.5 NiMo	0.03	10	30	600	60	1000
351	Arsenic oxide	7.5-2.5 NiMo	0.03	10	50	200	60	735
352	Arsenic oxide	7.5-2.5 NiMo	0.03	10	50	400	60	760
353	Arsenic oxide	7.5-2.5 NiMo	0.03	10	50	600	60	750
354	Arsenic oxide	7.5-2.5 NiMo	0.03	10	75	200	60	274
355	Arsenic oxide	7.5-2.5 NiMo	0.03	10	75	400	60	270
356	Arsenic oxide	7.5-2.5 NiMo	0.03	10	75	600	60	260

Table 2A. Surface area and pore volume of fresh and spent adsorbent.

Adsorbent	surface area (m ² /g)				pore volume (cc/g)			
	Fresh	30/400	50/400	75/400	Fresh	30/400	50/400	75/400
alumina	181.4776	163.4588	163.9447	164.3815	0.236974	0.231641	0.214155	0.226715
2.5 Ni	173.4852	158.726	157.987	158.024	0.227363	0.22159	0.221671	0.220694
5 Ni	168.1135	155.116	155.8641	155.9404	0.225678	0.207215	0.20908	0.218717
7.5 Ni	156.5434	151.289	150.672	150.634	0.210329	0.200158	0.19787	0.19887
10 Ni	151.5845	143.9252	147.8925	144.6714	0.209423	0.197911	0.206648	0.190517
2.5 Mo	168.2971	159.6506	159.3914	152.3932	0.211674	0.210243	0.210907	0.210384
5 Mo	160.1481	157.3519	153.3176	156.4205	0.203037	0.20104	0.20176	0.201885
7.5 Mo	155.9688	152.715	149.7889	147.7805	0.188227	0.177845	0.181604	0.187433
10 Mo	136.0882	125.8539	127.2677	125.1375	0.175895	0.17304	0.168787	0.171387
2.5-7.5 MoNi	146.8642	141.9487	143.8972	141.6986	0.198229	0.193139	0.188838	0.184364
5-5 MoNi	143.3715	138.3914	140.4532	137.007	0.189608	0.183971	0.18241	0.188777
7.5-2.5 MoNi	146.1786	136.9466	136.5883	132.6846	0.186484	0.1848	0.173751	0.177334
2.5-7.5 NiMo	137.4587	125.6008	123.8527	126.1489	0.17613	0.173355	0.172153	0.174396
5-5 NiMo	139.4978	128.3936	127.9763	129.9223	0.178685	0.172311	0.177651	0.177905
7.5-2.5 NiMo	138.3876	130.7395	129.4071	128.5582	0.193927	0.190273	0.189255	0.19054

Table 3A. Pore sizes distribution of fresh and spent alumina.

Pore Diamete (A)	alumina	alumina	alumina	alumina
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(CC/g)
22.5	0.029163	0.024497	0.024911	0.024045
27.5	0.024708	0.024251	0.020339	0.019672
32.5	0.04426	0.03263	0.032108	0.03346
37.5	0.034162	0.027506	0.025892	0.026978
42.5	0.026928	0.025636	0.020342	0.021098
47.5	0.018839	0.023303	0.016855	0.023356
52.5	0.014604	0.020342	0.01383	0.019971
57.5	0.01206	0.016857	0.011414	0.016499
62.5	0.01007	0.00635	0.009524	0.013782
67.5	0.008552	0.005219	0.008083	0.01171
72.5	0.007367	0.00448	0.006959	0.010092
77.5	0.006384	0.003869	0.006026	0.00875
82.5	0.003556	0.002869	0.002496	0.003552

Pore Diamete (A)	alumina	alumina	alumina	alumina
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	10.32	9.35	10.02	8.43
27.5	8.74	9.26	8.18	6.90
32.5	15.66	12.46	12.92	11.74
37.5	12.09	10.50	10.42	9.46
42.5	9.53	9.79	8.19	7.40
47.5	6.67	8.90	6.78	8.19
52.5	5.17	7.77	5.56	7.01
57.5	4.27	6.44	4.59	5.79
62.5	3.56	2.42	3.83	4.83
67.5	3.03	1.99	3.25	4.11
72.5	2.61	1.71	2.80	3.54
77.5	2.26	1.48	2.42	3.07
82.5	1.26	1.10	1.00	1.25

Table 4A. Pore sizes distribution of fresh and spent 2.5 Ni adsorbents.

Pore Diameter (A)	2.5 Ni	2.5 Ni	2.5 Ni	2.5 Ni
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.027935	0.026591	0.026328	0.02576
27.5	0.023268	0.02304	0.02218	0.02192
32.5	0.042708	0.03829	0.03774	0.03618
37.5	0.03296	0.031497	0.03187	0.03389
42.5	0.025977	0.025071	0.02519	0.02508
47.5	0.018176	0.017097	0.01716	0.01752
52.5	0.013395	0.01198	0.01208	0.01309
57.5	0.011051	0.010387	0.01032	0.01138
62.5	0.009218	0.008162	0.008174	0.008075
67.5	0.007821	0.006819	0.006759	0.006741
72.5	0.006731	0.006431	0.006492	0.006419
77.5	0.005827	0.005437	0.005379	0.005349
82.5	0.004879	0.004628	0.004618	0.004601

Pore Diameter (A)	2.5 Ni	2.5 Ni	2.5 Ni	2.5 Ni
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	10.22	10.08	10.11	9.86
27.5	8.51	8.73	8.52	8.39
32.5	15.62	14.51	14.49	13.84
37.5	12.05	11.93	12.24	12.97
42.5	9.50	9.50	9.67	9.60
47.5	6.65	6.48	6.59	6.70
52.5	4.90	4.54	4.64	5.01
57.5	4.04	3.94	3.96	4.35
62.5	3.37	3.09	3.14	3.09
67.5	2.86	2.58	2.60	2.58
72.5	2.46	2.44	2.49	2.46
77.5	2.13	2.06	2.07	2.05
82.5	1.78	1.75	1.77	1.76

Table 5A. Pore sizes distribution of fresh and spent 5 Ni adsorbents.

Pore Diameter (A)	5 Ni	5 Ni	5 Ni	5 Ni
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.027678	0.027984	0.028325	0.03014
27.5	0.022623	0.022823	0.023262	0.024577
32.5	0.039587	0.034978	0.035361	0.03708
37.5	0.031709	0.027501	0.027273	0.029289
42.5	0.02498	0.021669	0.021481	0.023086
47.5	0.017984	0.014971	0.014977	0.01577
52.5	0.014351	0.010913	0.011634	0.011032
57.5	0.011852	0.008996	0.009596	0.009092
62.5	0.009896	0.007497	0.008002	0.007574
67.5	0.008405	0.006355	0.006787	0.00642
72.5	0.007241	0.005464	0.005839	0.005518
77.5	0.006043	0.004726	0.004904	0.004771
82.5	0.002127	0.003421	0.00234	0.003586

Pore Diameter (A)	5 Ni	5 Ni	5 Ni	2.5 Ni
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	10.43	11.51	11.56	11.79
27.5	8.53	9.39	9.49	9.62
32.5	14.92	14.39	14.43	14.51
37.5	11.95	11.32	11.13	11.46
42.5	9.41	8.92	8.77	9.03
47.5	6.78	6.16	6.11	6.17
52.5	5.41	4.49	4.75	4.32
57.5	4.47	3.70	3.92	3.56
62.5	3.73	3.08	3.27	2.96
67.5	3.17	2.61	2.77	2.51
72.5	2.73	2.25	2.38	2.16
77.5	2.28	1.94	2.00	1.87
82.5	0.80	1.41	0.96	1.40

Table 6A. Pore sizes distribution of fresh and spent 7.5 Ni adsorbents.

Pore Diameter (A)	7.5 Ni	7.5 Ni	7.5 Ni	7.5 Ni
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.024506	0.024498	0.02415	0.02409
27.5	0.020052	0.01875	0.01865	0.01785
32.5	0.03789	0.03519	0.03478	0.033487
37.5	0.029823	0.02767	0.02749	0.02678
42.5	0.023481	0.02109	0.02182	0.02102
47.5	0.017477	0.01739	0.01768	0.01735
52.5	0.013896	0.01308	0.01327	0.01389
57.5	0.011473	0.011428	0.011387	0.01081
62.5	0.009577	0.009549	0.009417	0.009408
67.5	0.008132	0.008118	0.008007	0.007891
72.5	0.007004	0.006892	0.006827	0.006719
77.5	0.006068	0.006019	0.006107	0.006091
82.5	0.00331	0.0034891	0.003587	0.003418

Pore Diameter (A)	7.5 Ni	7.5 Ni	7.5 Ni	7.5 Ni
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	9.75	10.15	9.86	10.00
27.5	7.98	7.77	7.61	7.41
32.5	15.07	14.58	14.20	13.91
37.5	11.86	11.46	11.22	11.12
42.5	9.34	8.74	8.91	8.73
47.5	6.95	7.20	7.22	7.21
52.5	5.53	5.42	5.42	5.77
57.5	4.56	4.73	4.65	4.49
62.5	3.81	3.96	3.84	3.91
67.5	3.23	3.36	3.27	3.28
72.5	2.79	2.86	2.79	2.79
77.5	2.41	2.49	2.49	2.53
82.5	1.32	1.45	1.46	1.42

Table 7A. Pore sizes distribution of fresh and spent 10 Ni adsorbents.

Pore Diameter (A)	10 Ni	10 Ni	10 Ni	10 Ni
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.027963	0.031364	0.031497	0.028531
27.5	0.023429	0.025503	0.025632	0.023226
32.5	0.035466	0.029077	0.032005	0.030285
37.5	0.03	0.023168	0.025667	0.024056
42.5	0.023622	0.01824	0.020227	0.018961
47.5	0.017671	0.013229	0.013813	0.012228
52.5	0.013998	0.009925	0.010077	0.009153
57.5	0.011559	0.008184	0.008308	0.007543
62.5	0.009651	0.006821	0.006923	0.006282
67.5	0.008196	0.005783	0.005869	0.005324
72.5	0.00706	0.004973	0.005046	0.004575
77.5	0.006118	0.004302	0.004364	0.003955
82.5	0.002618	0.002333	0.002427	0.003427

Pore Diameter (A)	10 Ni	10 Ni	10 Ni	10 Ni
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	10.78	14.06	13.45	13.16
27.5	9.03	11.43	10.95	10.71
32.5	13.67	13.04	13.67	13.97
37.5	11.56	10.39	10.96	11.09
42.5	9.11	8.18	8.64	8.74
47.5	6.81	5.93	5.90	5.64
52.5	5.40	4.45	4.30	4.22
57.5	4.46	3.67	3.55	3.48
62.5	3.72	3.06	2.96	2.90
67.5	3.16	2.59	2.51	2.46
72.5	2.72	2.23	2.16	2.11
77.5	2.36	1.93	1.86	1.82
82.5	1.01	1.05	1.04	1.58

Table 8A. Pore sizes distribution of fresh and spent 2.5 Mo adsorbents.

Pore Diameter (A)	2.5 Mo	2.5 Mo	2.5 Mo	2.5 Mo
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.028241	0.032108	0.032667	0.031572
27.5	0.023549	0.026138	0.026589	0.025701
32.5	0.036383	0.03403	0.034262	0.033143
37.5	0.028069	0.026947	0.02705	0.026534
42.5	0.022115	0.021231	0.02131	0.020907
47.5	0.014867	0.013848	0.013955	0.014102
52.5	0.011576	0.010582	0.010695	0.01046
57.5	0.009547	0.008719	0.008813	0.008621
62.5	0.007959	0.007261	0.007339	0.007182
67.5	0.00675	0.006152	0.006219	0.006088
72.5	0.005806	0.005286	0.005344	0.005233
77.5	0.005023	0.004569	0.004619	0.004448
82.5	0.004312	0.003824	0.003834	0.002566

Pore Diameter (A)	2.5 Mo	2.5 Mo	2.5 Mo	2.5 Mo
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	11.52	12.95	13.08	13.02
27.5	9.60	10.55	10.65	10.60
32.5	14.84	13.73	13.72	13.66
37.5	11.45	10.87	10.83	10.94
42.5	9.02	8.57	8.53	8.62
47.5	6.06	5.59	5.59	5.81
52.5	4.72	4.27	4.28	4.31
57.5	3.89	3.52	3.53	3.55
62.5	3.25	2.93	2.94	2.96
67.5	2.75	2.48	2.49	2.51
72.5	2.37	2.13	2.14	2.16
77.5	2.05	1.84	2.57	1.83
82.5	1.76	1.54	1.53	1.06

Table 9A. Pore sizes distribution of fresh and spent 5 Mo adsorbents.

Pore Diameter (A)	5 Mo	5 Mo	5 Mo	5 Mo
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.03359	0.036147	0.035365	0.03623
27.5	0.027353	0.029371	0.028736	0.029439
32.5	0.037942	0.032522	0.031763	0.033007
37.5	0.029384	0.025843	0.025248	0.025769
42.5	0.023216	0.020424	0.019953	0.020364
47.5	0.013011	0.011866	0.01163	0.010706
52.5	0.009031	0.006737	0.006662	0.007268
57.5	0.007446	0.005544	0.005483	0.005985
62.5	0.006206	0.00461	0.00456	0.004981
67.5	0.005262	0.003901	0.003859	0.004218
72.5	0.004525	0.003347	0.003311	0.003621
77.5	0.003914	0.002888	0.002858	0.003128
82.5	0.003394	0.002321	0.002294	0.002098

Pore Diameter (A)	5 Mo	5 Mo	5 Mo	5 Mo
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	14.02	16.04	15.69	16.05
27.5	11.42	13.03	12.75	13.04
32.5	15.83	14.43	14.09	14.62
37.5	12.26	11.47	11.20	11.41
42.5	9.69	9.06	8.85	9.02
47.5	5.43	5.26	5.16	4.74
52.5	3.77	2.99	2.96	3.22
57.5	3.11	2.46	2.43	2.65
62.5	2.59	2.05	2.02	2.21
67.5	2.20	1.73	1.71	1.87
72.5	1.89	1.49	1.47	1.60
77.5	1.63	1.28	1.27	1.39
82.5	1.42	1.03	1.02	0.93

Table 10A. Pore sizes distribution of fresh and spent 7.5 Mo adsorbents.

Pore Diameter (A)	7.5 Mo	7.5 Mo	7.5 Mo	7.5 Mo
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.028698	0.027179	0.028147	0.026197
27.5	0.023645	0.022087	0.022854	0.021282
32.5	0.032289	0.023514	0.021701	0.021391
37.5	0.024946	0.018675	0.017202	0.017066
42.5	0.019683	0.014689	0.013504	0.013399
47.5	0.011761	0.01092	0.010757	0.010711
52.5	0.008891	0.008259	0.008748	0.008716
57.5	0.007331	0.006804	0.007207	0.007183
62.5	0.006109	0.005666	0.006001	0.005982
67.5	0.00518	0.004801	0.005085	0.005069
72.5	0.004454	0.004124	0.004368	0.004356
77.5	0.003853	0.003565	0.003775	0.003766
82.5	0.002213	0.002163	0.002446	0.002201

Pore Diameter (A)	7.5 Mo	7.5 Mo	7.5 Mo	7.5 Mo
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	13.31	14.19	14.58	13.99
27.5	10.97	11.53	11.84	11.36
32.5	14.98	12.27	11.24	11.42
37.5	11.57	9.75	8.91	9.11
42.5	9.13	7.67	6.99	7.15
47.5	5.46	5.70	5.57	5.72
52.5	4.12	4.31	4.53	4.65
57.5	3.40	3.55	3.73	3.84
62.5	2.83	2.96	3.11	3.19
67.5	2.40	2.51	2.63	2.71
72.5	2.07	2.15	2.26	2.33
77.5	1.79	1.86	1.96	2.01
82.5	1.03	1.13	1.27	1.18

Table 11A. Pore sizes distribution of fresh and spent 10 Mo adsorbents.

Pore Diameter (A)	10 Mo	10 Mo	10 Mo	10 Mo
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.023231	0.065553	0.021684	0.02484
27.5	0.018953	0.05299	0.017676	0.023591
32.5	0.030543	0.039375	0.015153	0.033788
37.5	0.024328	0.030257	0.01162	0.026221
42.5	0.019221	0.023737	0.009096	0.019343
47.5	0.010372	0.01872	0.008145	0.00566
52.5	0.007428	0.015153	0.00696	0.004585
57.5	0.006123	0.01247	0.005733	0.003765
62.5	0.005101	0.01037	0.004773	0.003124
67.5	0.004324	0.008776	0.004043	0.002638
72.5	0.003717	0.00753	0.003472	0.002258
77.5	0.003214	0.0065	0.003	0.001944
82.5	0.002182	0.005455	0.002082	0.001826

Pore Diameter (A)	10 Mo	10 Mo	10 Mo	10 Mo
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	12.12	17.48	14.58	13.38
27.5	9.89	14.13	11.89	12.70
32.5	15.94	10.50	10.19	18.19
37.5	12.70	8.07	7.81	14.12
42.5	10.03	6.33	6.12	10.42
47.5	5.41	4.99	5.48	3.05
52.5	3.88	4.04	4.68	2.47
57.5	3.20	3.33	3.85	2.03
62.5	2.66	2.77	3.21	1.68
67.5	2.26	2.34	2.72	1.42
72.5	1.94	2.01	2.33	1.22
77.5	1.68	1.73	2.02	1.05
82.5	1.14	1.45	1.40	0.98

Table 12A. Pore sizes distribution of fresh and spent 2.5-7.5 MoNi adsorbents.

Pore Diameter (A)	2.5-7.5 MoNi	2.5-7.5 MoNi	2.5-7.5 MoNi	2.5-7.5 MoNi
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.018262	0.027041	0.028029	0.029128
27.5	0.014971	0.021985	0.022791	0.023681
32.5	0.030637	0.024183	0.025654	0.026115
37.5	0.024372	0.019389	0.020391	0.02081
42.5	0.01913	0.015226	0.016025	0.016355
47.5	0.016413	0.011905	0.012231	0.01264
52.5	0.013679	0.009652	0.009604	0.009974
57.5	0.011287	0.007952	0.007912	0.008221
62.5	0.009416	0.006622	0.006588	0.006848
67.5	0.007991	0.005611	0.005581	0.005804
72.5	0.006877	0.004821	0.004795	0.004988
77.5	0.005955	0.004167	0.004144	0.004279
82.5	0.003574	0.00361	0.003589	0.002513

Pore Diameter (A)	2.5-7.5 MoNi	2.5-7.5 MoNi	2.5-7.5 MoNi	2.5-7.5 MoNi
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	8.05	13.24	13.36	13.57
27.5	6.60	10.76	10.86	11.03
32.5	13.51	11.84	12.23	12.16
37.5	10.75	9.49	9.72	9.69
42.5	8.44	7.46	7.64	7.62
47.5	7.24	5.83	5.83	5.89
52.5	6.03	4.73	4.58	4.65
57.5	4.98	3.89	3.77	3.83
62.5	4.15	3.24	3.14	3.19
67.5	3.52	2.75	2.66	2.70
72.5	3.03	2.36	2.29	2.32
77.5	2.63	2.04	1.98	1.99
82.5	1.58	1.77	1.71	1.17

Table 13A. Pore sizes distribution of fresh and spent 5-5 MoNi adsorbents.

Pore Diameter (Å)	5-5 MoNi	5-5 MoNi	5-5 MoNi	5-5 MoNi
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.02867	0.027041	0.034192	0.035524
27.5	0.023654	0.021985	0.027725	0.028804
32.5	0.03523	0.024183	0.023208	0.024199
37.5	0.027237	0.019389	0.018063	0.018858
42.5	0.021507	0.015226	0.014246	0.014877
47.5	0.0128	0.011905	0.008239	0.008423
52.5	0.009352	0.009652	0.006068	0.00608
57.5	0.007716	0.007952	0.004993	0.005002
62.5	0.006437	0.006622	0.004152	0.004158
67.5	0.005462	0.005611	0.003514	0.003518
72.5	0.0047	0.004821	0.003015	0.003017
77.5	0.004069	0.004167	0.002602	0.002603
82.5	0.002556	0.00361	0.002039	0.00212

Pore Diameter (Å)	5-5 MoNi	5-5 MoNi	5-5 MoNi	5-5 MoNi
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	12.89	13.24	18.18	18.27
27.5	10.64	10.76	14.74	14.81
32.5	15.84	11.84	12.34	12.44
37.5	12.25	9.49	9.61	9.70
42.5	9.67	7.46	7.58	7.65
47.5	5.76	5.83	4.38	4.33
52.5	4.21	4.73	3.23	3.13
57.5	3.47	3.89	2.66	2.57
62.5	2.89	3.24	2.21	2.14
67.5	2.46	2.75	1.87	1.81
72.5	2.11	2.36	1.60	1.55
77.5	1.83	2.04	1.38	1.34
82.5	1.15	1.77	1.08	1.09

Table 14A. Pore sizes distribution of fresh and spent 7.5-2.5 MoNi adsorbents.

Pore Diameter (A)	7.5-2.5 MoNi	7.5-2.5 MoNi	7.5-2.5 MoNi	7.5-2.5 MoNi
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.027675	0.023511	0.027966	0.028115
27.5	0.023209	0.023602	0.022696	0.022818
32.5	0.02708	0.042541	0.020912	0.021152
37.5	0.021954	0.033016	0.016496	0.016678
42.5	0.016801	0.025599	0.012985	0.013125
47.5	0.010087	0.007316	0.008705	0.008883
52.5	0.008408	0.005933	0.006707	0.006923
57.5	0.006008	0.004879	0.005522	0.0057
62.5	0.005023	0.004053	0.004595	0.004743
67.5	0.004098	0.003428	0.00389	0.004016
72.5	0.003728	0.002938	0.00334	0.003447
77.5	0.003092	0.002534	0.002884	0.002977
82.5	0.002119	0.002194	0.002111	0.002119



Pore Diameter (A)	7.5-2.5 MoNi	7.5-2.5 MoNi	7.5-2.5 MoNi	7.5-2.5 MoNi
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	14.18	10.86	16.03	15.84
27.5	11.89	10.90	13.01	12.86
32.5	13.88	19.65	11.99	11.92
37.5	11.25	15.25	9.46	9.40
42.5	8.61	11.83	7.44	7.40
47.5	5.17	3.38	4.99	5.01
52.5	4.31	2.74	3.84	3.90
57.5	3.08	2.25	3.17	3.21
62.5	2.57	1.87	2.63	2.67
67.5	2.10	1.58	2.23	2.26
72.5	1.91	1.36	1.91	1.94
77.5	1.58	1.17	1.65	1.68
82.5	1.09	1.01	1.21	1.19

Table 15A. Pore sizes distribution of fresh and spent 2.5-7.5 NiMo adsorbents.

Pore Diameter (A)	2.5-7.5 NiMo	2.5-7.5 NiMo	2.5-7.5 NiMo	2.5-7.5 NiMo
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.01587	0.01918	0.018318	0.020923
27.5	0.013616	0.015991	0.015474	0.017002
32.5	0.030582	0.018579	0.018526	0.016915
37.5	0.023589	0.014244	0.014208	0.013598
42.5	0.018581	0.011146	0.011123	0.010637
47.5	0.012392	0.010524	0.01029	0.010291
52.5	0.009816	0.008944	0.008571	0.008803
57.5	0.008094	0.007372	0.007063	0.007257
62.5	0.006746	0.006142	0.005882	0.006047
67.5	0.00572	0.005206	0.004984	0.005127
72.5	0.004919	0.004475	0.004283	0.004408
77.5	0.004255	0.003869	0.003702	0.003701
82.5	0.003475	0.002165	0.003207	0.00192

Pore Diameter (A)	2.5-7.5 NiMo	2.5-7.5 NiMo	2.5-7.5 NiMo	2.5-7.5 NiMo
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	8.09	11.43	11.18	12.67
27.5	6.94	9.53	9.45	10.29
32.5	15.58	11.08	11.31	10.24
37.5	12.02	8.49	8.68	8.23
42.5	9.47	6.64	6.79	6.44
47.5	6.31	6.27	6.28	6.23
52.5	5.00	5.33	5.23	5.33
57.5	4.12	4.39	4.31	4.39
62.5	3.44	3.66	3.59	3.66
67.5	2.91	3.10	3.04	3.10
72.5	2.51	2.67	2.62	2.67
77.5	2.17	2.31	2.26	2.24
82.5	1.77	1.29	1.96	1.16

Table 16A. Pore sizes distribution of fresh and spent 5-5 NiMo adsorbents.

Pore Diameter	5-5 NiMo	5-5 NiMo	5-5 NiMo	5-5 NiMo
	fresh	30/400	50/400	75/400
22.5	0.018422	0.01918	0.018318	0.020923
27.5	0.016556	0.015991	0.015474	0.017002
32.5	0.034744	0.018579	0.018526	0.016915
37.5	0.026836	0.014244	0.014208	0.013598
42.5	0.02117	0.01146	0.011123	0.010637
47.5	0.014115	0.010524	0.01029	0.010291
52.5	0.01016	0.008944	0.008571	0.008803
57.5	0.008385	0.007372	0.007063	0.007257
62.5	0.006995	0.00614	0.005882	0.006047
67.5	0.005937	0.005206	0.004984	0.005127
72.5	0.00511	0.004475	0.004283	0.004408
77.5	0.004327	0.003896	0.003702	0.003701
82.5	0.001719	0.002165	0.003207	0.00192

Pore Diameter	5-5 NiMo	5-5 NiMo	5-5 NiMo	5-5 NiMo
	fresh	30/400	50/400	75/400
22.5	8.71	11.07	10.65	12.21
27.5	7.82	9.23	9.00	9.92
32.5	16.42	10.72	10.77	9.87
37.5	12.68	8.22	8.26	7.93
42.5	10.01	6.62	6.47	6.21
47.5	6.67	6.07	5.98	6.00
52.5	4.80	5.16	4.98	5.14
57.5	3.96	4.26	4.11	4.23
62.5	3.31	3.54	3.42	3.53
67.5	2.81	3.01	2.90	2.99
72.5	2.42	2.58	2.49	2.57
77.5	2.04	2.25	2.15	2.16
82.5	0.81	1.25	1.87	1.12

Table 17A. Pore sizes distribution of fresh and spent 7.5-2.5 NiMo adsorbents.

Pore Diameter (A)	7.5-2.5 NiMo	7.5-2.5 NiMo	7.5-2.5 NiMo	7.5-2.5 NiMo
	fresh(cc/g)	30/400(cc/g)	50/400(cc/g)	75/400(cc/g)
22.5	0.015714	0.018813	0.025318	0.034641
27.5	0.013099	0.01538	0.015474	0.028192
32.5	0.029558	0.025781	0.018526	0.034122
37.5	0.022716	0.022022	0.014208	0.026782
42.5	0.017823	0.017293	0.011123	0.021005
47.5	0.015714	0.014009	0.01029	0.018163
52.5	0.013065	0.011545	0.008571	0.015012
57.5	0.010781	0.009519	0.007063	0.012377
62.5	0.008994	0.007934	0.005882	0.010314
67.5	0.007633	0.006728	0.004984	0.008745
72.5	0.00657	0.005786	0.004283	0.007519
77.5	0.005688	0.005006	0.003702	0.006504
82.5	0.002768	0.004152	0.003207	0.003813

Pore Diameter (A)	7.5-2.5 NiMo	7.5-2.5 NiMo	7.5-2.5 NiMo	7.5-2.5 NiMo
	fresh(%)	30/400(%)	50/400(%)	75/400(%)
22.5	7.37	9.13	14.10	12.13
27.5	6.14	7.46	8.62	9.87
32.5	13.86	12.51	10.32	11.95
37.5	10.65	10.68	7.91	9.38
42.5	8.36	8.39	6.20	7.35
47.5	7.37	6.80	5.73	6.36
52.5	6.13	5.60	4.77	5.26
57.5	5.05	4.62	3.93	4.33
62.5	4.22	3.85	3.28	3.61
67.5	3.58	3.26	2.78	3.06
72.5	3.08	2.81	2.39	2.63
77.5	2.67	2.43	2.06	2.28
82.5	1.30	2.01	1.79	1.33



VITA

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