用我国各地实测资料拟合的高架源大气扩散参数

顾永瑞　张　彤　王冬朴
（内蒙古环境保护监测中心站，呼和浩特　0100101）

摘要　采用Briggs大气扩散参数的一般式（$\sigma=\alpha x(1+\beta x)^{-\frac{1}{2}}$）将国内一些实测大气扩散参数组织拟合，求出高架源大气扩散参数。拟合大气扩散参数经与GB3840-91和Briggs大气扩散参数比较结果合理，一般适用于100m以上的高架源扩散情况。因此在大气扩散计算中有实用价值。

关键词　大气扩散，拟合，高架源。

在我国的大气扩散计算中，通常采用GB3840-91中的方法，而Pasqill-Gifford曲线及幂次律公式所依据的实测资料，大多数是对近地面排放源水平数1km距离之内，平坦地形的扩散实验结果。在涉及到城市大气扩散计算中，当城市大气污染源的高度在100m左右时，也有许多人采用Briggs的公式计算扩散参数。尽管2种方法可作到互相弥补，但涉及到高架排放源的扩散时，仍以实测为主。而国内针对高架排放源的实测大气扩散资料已有了许多贮备。本文利用国内一些实测大气扩散参数资料，采用参数拟合法将它们统一起来，以求得高架排放源的大气扩散参数。

1　大气扩散参数拟合方法

对国内一些实测大气扩散参数按地形和不同稳定度分类（见表1），并进行统一处理。

采用Briggs公式的一般形式进行，即：

$$\sigma = \alpha x(1 + \beta x)^{-\frac{1}{2}} \tag{1}$$

对于拟合扩散参数，有N组x、σ。要使给出的拟合曲线与（1）式相吻合，必须使最小离差平方和趋向最小，即：

$$\sum_{i=1}^{N}[\sigma_{ij} - \alpha x_j/(1 + \beta x_j)^{\frac{1}{2}}]^2 = \text{最小}$$

对α求导，并令其为零，得：

$$\alpha = \sum_{j=1}^{N} \frac{\sigma_{ij}x_j}{(1 + \beta x_j)^{\frac{1}{2}}} \Big/ \sum_{j=1}^{N} \frac{x_j{}^2}{(1 + \beta x_j)} \tag{2}$$

$$\sum_{j=1}^{N}[(\frac{\alpha x_j}{\sigma_{ij}})^2-(1+\beta x_j)]^2=\text{最小}$$

对β求导，并令其为零，得：

$$\beta_0' = \frac{\sum_{j=1}^{N}[(\frac{\alpha}{\sigma_{ij}})^2 x_j^3] - \sum_{j=1}^{N}x_j}{\sum_{j=1}^{N}x_j^2} \tag{3}$$

为了联解α与β，先给α初值。令$x_j\to 0$（如100m或曲线在端点的斜率），即：

$$\frac{\alpha\sigma_i}{\alpha x}\Big|_{x\to 0} = \alpha_1$$

那么：

$$\alpha_1 \doteq \frac{\sigma_{i(100)}}{100}$$

把求得的α_1代入（3）式求出β_1；再把β_1代入（2）式求得α_2，如此反复叠代，直到α、β都收敛为止。

2　拟合结果

用上述参数拟合法，将实测大气扩散参数按不同地域类型分大气稳定度组进行Briggs一般形式拟合。由于实测资料的局限，对某些稳定度下缺乏扩散参数的情况，采用内插法来弥补。

将拟合的大气扩散参数以幂指数形式表达（见表2）。

3　拟合扩散参数与国标和Briggs扩散参数比较

3.1　与国标扩散参数的比较

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拟合扩散参数与国标扩散参数的比较见表 3。

表 1　各地实测大气扩散参数

地 区	稳定度	σ_y	σ_2	试验方法	高度(m)	距离(m)	地 点
平原地区	A-B	$0.293x^{0.963}$	$0.23x^{0.85}$	等容球	200	10000	上海宝钢
	A-B	$0.60x^{0.89}$	$0.41x^{0.81}$	平衡球	200—400	5000	首钢迁安
	A-B	$0.41x^{0.86}$	$0.40x^{0.85}$	平衡球	200	10000	呼市化肥厂
	C-D	$0.340x^{0.781}$	$0.42x^{0.66}$	等容球	200	10000	上海宝钢
	C-D	$0.233x^{0.841}$	$0.27x^{0.89}$	等容球	200	10000	上海宝钢
	C-D	$0.38x^{0.78}$		等容球	200	10000	上海宝钢
	C-D	$0.26x^{0.86}$	$0.35x^{0.76}$	平衡球	200—400	5000	首钢迁安
	C-D	$0.30x^{0.84}$	$0.35x^{0.76}$	平衡球	200—400	5000	首钢迁安
	C-D	$0.38x^{0.82}$	$0.54x^{0.73}$	风洞	100—400	10000	首钢迁安
	C-D	$0.42x^{0.82}$	$0.30x^{0.77}$	平衡球	200	10000	呼市化肥厂
	E-F	$0.309x^{0.719}$	$0.41x^{0.57}$	等容球	200	10000	上海宝钢
	E-F	$0.382x^{0.769}$		等容球	200	10000	上海宝钢
	E-F	$0.34x^{0.70}$		等容球	200	10000	上海宝钢
	E-F	$0.32x^{0.70}$	$0.16x^{0.74}$	平衡球	200—400	5000	首钢迁安
	E-F	$0.18x^{0.85}$	$0.25x^{0.69}$	平衡球	200	10000	呼市化肥厂
	F	$0.42x^{0.77}$		等容球	200	10000	上海宝钢
城市	B	$0.28x^{0.95}$	$0.1x^{1.21}$	SF6 示踪	80	5000	包头市
	B	$0.269x^{0.960}$		SF6 示踪	80	5000	包头市
	B	$0.31x^{0.96}$		超声风速			包头市
	C	$0.225x^{0.885}$	$0.238x^{0.898}$	平衡球	80	10000	上海市
	C	$0.50x^{0.83}$	$0.23x^{0.93}$	超声风速		10000	包头市
	C-D	$0.43x^{0.84}$	$0.19x^{1.02}$	SF6 示踪	80	5000	包头市
	C-D	$0.45x^{0.83}$		SF6 示踪	80	5000	包头市
	C-D	$0.47x^{0.82}$	$0.50x^{0.79}$	等容球	200	5000	包头市
	C-D	$0.30x^{0.88}$		等容球	200	5000	包头市
	D	$0.52x^{0.83}$	$0.45x^{0.80}$	超声风速			包头市
	D	$0.230x^{0.848}$	$0.177x^{0.828}$	平衡球	80	10000	上海市
	D	$0.36x^{0.88}$		SF6 示踪	100	12000	太原市
	D	$0.21x^{0.93}$		SF6 示踪	100	12000	太原市
	D	$0.34x^{0.81}$		风洞			包头市
	E	$0.584x^{0.679}$	$0.574x^{0.652}$	平衡球	100	10000	上海市
	E-F	$0.45x^{0.75}$	$0.49x^{0.69}$	等容球	200	5000	包头市
	F	$0.20x^{0.90}$	$0.16x^{0.60}$	SF6 示踪	100	12000	太原市
	F	$0.16x^{0.92}$		SF6 示踪	100	12000	太原市
山区	A-B	$0.87x^{0.78}$	$0.82x^{0.79}$	等容球	50—500	15000	古交
	B	$0.7535x^{0.846}$	$1.2861x^{0.7057}$	平衡球	250	2000	金沙江
	B		$0.21x^{1.05}$	照相	102	1000	古交
	C	$0.98x^{0.71}$	$0.46x^{0.75}$	等容球	50—500	15000	古交
	D	$0.6308x^{0.849}$	$0.9412x^{0.7129}$	平衡球	250	2000	金沙江
	D	$0.8864x^{0.8715}$	$0.9842x^{0.7114}$	平衡球	250	2000	金沙江
	D	$0.865x^{0.728}$	$0.465x^{0.742}$	平衡球	100—150	2000	湘西
	D	$0.88x^{0.68}$	$0.60x^{0.70}$	等容球	50—500	15000	古交
	D		$0.15x^{0.95}$	照相	102	1000	古交
	E	$0.904x^{0.661}$	$0.670x^{0.607}$	平衡球	100—150	2000	湘西
	E-F		$0.25x^{0.78}$	照相	102	1000	古交
	F	$0.5649x^{0.8835}$	$1.4566x^{0.6275}$	平衡球	250	2000	金沙江

续表 1

	A	$0.281x^{0.953}$	$0.20x^{1.00}$	照相	290	2500	徐州电厂
	A-B	$0.779x^{0.781}$	$0.738x^{0.78}$	平衡球	150	2000	三汇贝
	B	$0.76x^{0.91}$	$0.54x^{0.97}$	激光雷达	100	1000	清水塘
	B	$0.50x^{0.85}$	$0.55x^{0.93}$	照相	100	1000	清水塘
丘	B	$0.78x^{0.84}$	$0.74x^{0.84}$	等容球	200—300	3000	清水塘
	B	$0.60x^{0.85}$	$0.0002x^{2.11}$	照相	100	1000	准格尔
	C		$0.30x^{0.97}$	激光雷达	100	1000	清水塘
	C	$0.72x^{0.80}$	$0.43x^{0.95}$	照相	100	1000	清水塘
	C	$0.59x^{0.82}$	$0.54x^{0.83}$	等容球	200—300	3000	清水塘
	C	$0.39x^{0.86}$	$0.057x^{1.09}$	照相	100	1000	准格尔
陵	C	$0.14x^{0.953}$	$0.079x^{1.00}$	照相	290	2500	徐州电厂
	D	$0.489x^{0.861}$	$0.522x^{0.776}$	平衡球	150	2000	三汇贝
	D		$0.35x^{0.90}$	激光雷达	100	1000	清水塘
	D	$0.48x^{0.82}$	$0.19x^{0.98}$	照相	100	1000	清水塘
	D	$0.43x^{0.81}$	$0.31x^{0.86}$	等容球	200—300	3000	清水塘
	D	$0.23x^{0.88}$	$0.057x^{1.09}$	照相	100	1000	准格尔
	D	$0.102x^{0.953}$	$0.059x^{1.00}$	照相	290	2500	徐州电厂
	E	$0.43x^{0.85}$		激光雷达	100	1000	清水塘
	E	$0.46x^{0.80}$		照相	100	1000	清水塘
	F		$0.40x^{0.82}$	激光雷达	100	1000	清水塘
	F		$0.33x^{0.87}$	照相	100	1000	清水塘
	F	$0.10x^{0.89}$	$0.112x^{0.77}$	照相	100	1000	准格尔
	F	$0.051x^{0.953}$	$0.066x^{1.00}$	照相	290	2500	徐州电厂

(1)平原地区　拟合的 σ_y 和 σ_z 总体上偏小于国标的 σ_y 和 σ_z。

(2)城市　拟合的 σ_y 和 σ_z 在C稳定度时,偏小于国标的 σ_y 和 σ_z,但相差不大;在其它稳定度时,拟合的 σ_y 和 σ_z 都偏大于国标的 σ_y 和 σ_z。

(3)山区　拟合的 σ_y 在B稳定度时偏大于国标的 σ_y;在其它稳定度时,拟合的 σ_y 和 σ_z 都偏小于国标的 σ_y 和 σ_z。

(4)丘陵　拟合的 σ_y 除B稳定度时外,在其它稳定度时都小于国标扩散参数。拟合的 σ_z 在D和E稳定度时大于国标扩散参数;在B稳定度时接近国标扩散参数;在C稳定时小于国标扩散参数。

以上比较表明,国标扩散参数一般要偏大于拟合扩散参数。从2套扩散参数随 x 轴方向延伸的变化情况分析,它们之间存在系统差别,即拟合扩散参数曲线较国标扩散参数曲线平滑,国标扩散参数曲线的倾角较大。使得2种扩散参数在下风向 x 轴线距离上表现出:在近处,拟合扩散参数一般大于国标扩散参数;在远处,拟合扩散参数一般小于国标扩散参数。

3.2　与Briggs扩散参数的比较

拟合扩散参数与Briggs扩散参数的比较见表3。

(1)平原地区　拟合的 σ_y 偏小于Briggs的 σ_y。拟合的 σ_z 在B和C稳定度时偏小于Briggs的 σ_z;在D和E稳定度时偏大于Briggs的 σ_z。

(2)城市　拟合的 σ_y 偏小于Briggs的 σ_y。拟合的 σ_z 在B和E稳定度时偏大于Briggs的 σ_z;在C和D稳定度时小于Briggs的 σ_z,尤其在C稳定度时相差较大。

总之,Briggs扩散参数一般要大于拟合扩散参数。从2套扩散参数随下风向 x 轴方向延伸的变化情况分析,2套扩散参数曲线平行性较好。

4　结果与讨论

本拟合扩散参数是在国内一些实测扩散参数基础上,采用Briggs扩散参数的一般形式拟合得出的。它能够反映实测扩散参数总体分布的集中统一分布轨迹。

表 2　拟合扩散参数表达式及系数值(取样时间 0.5h)

地区	稳定度	$\sigma_y=r_1x^{a_1}$		$\sigma_z=r_2x^{a_2}$		下风距离(m)
		r_1	a_1	r_2	a_2	
平原地区	A	0.256	0.994	0.211	0.994	≤2000
		0.245	0.994	0.199	0.995	>2000≤5000
		0.221	0.965	0.193	0.995	>5000
	B	0.179	0.973	0.129	0.994	≤2000
		0.179	0.953	0.117	0.994	>2000≤5000
		0.166	0.953	0.110	0.994	>5000
	C	0.128	0.973	0.097	0.956	≤2000
		0.124	0.953	0.089	0.928	>2000≤5000
		0.116	0.953	0.082	0.928	>5000
	D	0.089	0.973	0.083	0.912	≤2000
		0.087	0.953	0.083	0.869	>2000≤5000
		0.084	0.953	0.073	0.869	>5000
	E	0.067	0.973	0.069	0.882	≤2000
		0.066	0.953	0.075	0.834	>2000≤5000
		0.065	0.953	0.066	0.834	>5000
	F	0.064	0.953	0.087	0.819	≤2000
		0.054	0.953	0.075	0.820	>2000≤5000
		0.053	0.953	0.068	0.820	>5000
城市	A	0.532	0.865	0.497	0.912	>0
	B	0.526	0.865	0.359	0.913	>0
	C	0.368	0.860	0.271	0.893	≤3000
		0.304	0.893	0.168	0.965	>3000
	D	0.275	0.875	0.201	0.860	≤3000
		0.251	0.891	0.186	0.869	>3000
	E	0.209	0.860	0.158	0.859	≤3000
		0.252	0.795	0.139	0.834	>3000
	F	0.119	0.965	0.087	0.742	≤3000
		0.169	0.829	0.089	0.718	>3000
山区	A	0.608	0.869	0.631	0.850	>0
	B	0.315	0.913	0.371	0.875	≤2000
		0.309	0.919	0.299	0.850	>2000
	C	0.394	0.834	0.264	0.834	>0
	D	0.272	0.893	0.189	0.893	≤2000
		0.316	0.834	0.221	0.834	>2000
	E	0.198	0.812	0.441	0.612	≤2000
		0.181	0.785	0.342	0.589	>2000
	F	0.128	0.893	0.364	0.651	≤2000
		0.143	0.803	0.246	0.633	>2000
丘陵	A	0.483	0.860	0.563	0.834	>0
	B	0.319	0.938	0.428	0.874	≤1000
		0.322	0.914	0.481	0.840	>1000≤2000
		0.324	0.913	0.504	0.834	>2000
	C	0.221	0.938	0.203	0.925	≤1000
		0.276	0.893	0.223	0.893	>1000
	D	0.181	0.925	0.165	0.925	≤1000
		0.186	0.914	0.158	0.914	>1000≤2000
		0.195	0.893	0.162	0.893	>2000
	E	0.102	0.914	0.075	0.915	>0
	F	0.078	0.914	0.056	0.914	>0

通过拟合扩散参数与国标和 Briggs 扩散参数的比较,它们之间确实存在着一定水平的差异。分析其原因,国标扩散参数是基于 Pasquill-Gifford 曲线以幂次律公式表示的扩散参数,而

表 3 拟合扩散参数与国标及Briggs扩散参数比较

地区	稳定度	名称意义	σ_y(m) 100	400	1000	2000	3000	5000	σ_z(m) 100	400	1000	2000	3000	5000
	B	N	15.8	60.9	148.5	291.6	368.6	599.8	12.5	49.8	123.8	246.5	334.5	555.8
		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
		B	15.9	62.8	152.6	292.1	420.9	653.2	12.0	48.0	120.0	240.0	360.0	600.0
平	C	N	11.3	43.5	106.2	208.5	255.3	415.5	7.9	29.8	71.6	138.8	150.0	241.0
		G	12.5	45.0	105.0	193.9	277.7	436.4	7.3	26.1	60.4	114.2	165.6	264.9
原		B	10.9	43.2	104.9	200.8	289.4	449.1	7.9	30.8	73.0	135.2	189.7	282.8
			7.8	30.3	73.8	144.9	179.1	291.5	5.5	19.6	45.2	85.0	87.2	135.9
地	D	G	10.3	37.1	86.8	160.4	229.8	361.5	6.0	19.2	41.4	74.0	100.6	147.9
		B	7.9	31.4	76.3	146.1	210.5	326.6	5.6	18.9	37.9	60.0	76.8	102.9
区	E	N	5.9	22.8	55.6	109.1	135.9	221.1	4.0	13.6	30.5	56.3	59.6	91.2
		G	6.9	25.2	58.8	110.1	158.1	249.4	4.0	11.7	23.9	41.0	51.7	69.3
		B	5.9	23.5	57.2	109.5	157.9	244.9	2.9	10.7	23.1	37.5	47.4	60.0
	B	N	28.2	93.7	207.0	377.0	355.4	832.9	24.0	85.3	196.8	370.6	536.7	855.6
		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
		B	31.4	118.8	270.4	477.0	647.2	923.8	22.9	81.1	169.7	277.1	360.0	489.9
	C	N	19.3	63.6	139.9	253.9	359.9	611.0	16.6	57.1	129.4	240.3	345.2	623.5
城		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
		B	21.6	81.7	185.9	327.9	444.9	635.1	20.0	80.0	200.0	400.0	600.0	1000.0
市	D	N	15.5	52.0	115.9	212.7	303.2	495.5	10.5	34.8	76.4	138.7	196.6	304.7
		G	12.5	45.0	105.0	193.9	277.7	436.4	7.3	26.1	60.4	114.2	165.6	264.7
		B	15.7	59.4	136.2	238.5	323.6	461.9	13.8	52.9	122.8	221.4	304.7	442.7
	E	N	10.9	36.1	79.4	144.2	204.4	219.8	8.2	27.2	59.6	108.2	153.3	169.0
		G	8.0	29.0	68.0	125.9	180.5	284.2	4.7	14.7	31.5	48.8	63.1	87.1
		B	10.8	40.8	92.9	163.9	222.5	317.5	7.5	25.3	50.6	80.0	102.3	137.2
	B	N	21.1	74.8	172.7	325.2	484.6	775.0	20.9	70.2	156.4	286.9	269.9	416.7
		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
山	C	N	18.3	58.3	125.2	223.1	312.9	479.1	12.3	39.0	83.9	149.5	209.7	321.0
		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
区	D	N	16.6	57.3	129.9	241.2	250.9	384.3	11.5	39.8	90.2	167.6	175.5	268.7
		G	12.5	45.0	105.0	193.9	277.7	436.4	7.3	26.1	60.4	114.2	165.6	264.7
	E	N	8.3	25.7	54.0	94.9	97.1	145.0	7.4	17.2	30.2	46.2	38.2	51.6
		G	8.0	29.0	68.0	125.9	180.5	284.2	4.7	14.8	31.5	48.8	63.1	87.1
	B	N	23.9	88.0	207.9	334.9	484.3	772.2	23.9	80.5	179.2	285.1	400.3	612.9
		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
丘	C	N	16.6	60.9	144.0	244.8	351.5	554.7	14.4	51.8	120.9	197.8	284.0	448.2
		G	19.0	67.5	156.0	284.1	403.5	627.7	10.8	41.1	108.8	232.2	361.8	632.6
陵	D	N	12.8	46.2	107.8	193.5	248.4	391.9	11.7	42.1	98.3	164.4	206.3	325.6
		G	12.5	45.0	105.0	193.9	277.7	436.4	7.4	26.5	61.5	116.1	168.4	269.2
	E	N	6.9	24.4	56.3	106.1	153.7	245.2	5.1	18.0	41.7	78.6	113.9	181.8
		G	8.0	29.0	68.0	125.9	180.5	284.2	4.7	14.8	31.5	48.8	63.1	87.1

N. 本文拟合参数　G. 国标规定参数　B. Briggs 参数

Pasqill-Gifford 曲线及幂次律公式所依据的实测资料，大多数是对近地面排放源的扩散实验结果。Briggs 扩散参数适应于 100m 以下的排放源的扩散情况。本拟合扩散参数的基础实测资料大都是反映 100m 以上空间的排放源扩散情况。由于下垫面的影响，一般高度越（下转第Ⅵ页）

such a function, the possible paths of such a degradation and their kinetic models, the biodegradabilities of various components of chlorinated aliphatics, and an evaluation on the reactors which have been used for such a biodegradation.

Key words: biodegradation, chlorinated aliphatics, biological wastewater treatment.

Biodegradation and Transformation of Phthalic Acid Esters. Pang Jinmei et al. (Shanxi Academy of agri. Sci., Tai Yuan 030031): *Chin. J. Environ. Sci.*, **15** (3), 1994, pp. 88—90

The environmental Pollution by phthalic acid esters (PAEs) and their degradation and transformation by micro-organism reported at home and abroad, were reviewed with the following conclusions: (1) PAEs have been ubiguitously detected in air, ground, river, drinking water and other waters in the world; (2) Micro-organisms can degrade PAEs and utilize them; (3) Reaction rate of microbial PAEs degradation can follow the first order reaction kinetics; (4) Combined meta-bolization of mixed micro-organisms in PAEs biodegradation is better than pure culture effect; (5) PAEs are hydrolyzed by microbial enzymes to monoester and phthalic acid, then can be metabolized and transformed under aerobic conditions, at last degraded to CO_2 and water.

Key words: phthalic acid esters, micro-organism, enzymes, degradation, transformation.

(上接第 46 页)低扩散参数值越大。拟合扩散参数所反映的高度比国标和 Briggs 扩散参数的高度要高,因此拟合扩散参数要小于国标和 Briggs 扩散参数是合理的。

在某些稳定度下,拟合扩散参数大于国标和 Briggs 扩散参数,这与实测资料有关。出现这种情况的原因有待于进一步研究。

本套拟合扩散参数一般适应于 100m 以上的高架源扩散情况。

拟合扩散参数曲线基本上与 Briggs 扩散参数曲线一致,与国标扩散参数曲线存在一定的差异,国标扩散参数曲线的倾角大于拟合扩散参数曲线的倾角。而实测扩散参数曲线大多都和拟合扩散参数曲线接近,这表明拟合扩散参数曲线基本符合实际情况。

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欢迎订阅《中国小造纸、小印染和高浓度有机废水治理技术交流会论文汇编》

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formate, deep oxidation, catalyst.

Study on the Recovery of Carbon Monoxide (CO) from Industrial Exhaust Gases by a Chemical Absorption Method. Su Chunhui, Che Yinchang et al. (Dept. of Nonferrous Metal., Northeastern University, Shen' yang 110006): *Chin. J. Environ. Sci.*, **15**(3), 1994, pp. 38—41

An aqueous $CuCl-MgCl_2$ system has been found to be a preferred, highly selective CO absorbent. A relationship between the maximum capacity of the absorbent to absorb CO and temperature was determined. The effects of a change in exhaust gas composition on CO recovery was also studied. The CO recovery with this absorption process was found to be up to 93%, and the recovered CO has a purity of 98% as determined by gas chromatography (GC). The CO gas can be desorbed from the CO absorbed absorbent liquor at temperatures in the range of 120—140℃. In addition, the mechanism of the absorption reaction between CO and the aqueous $CuCl-MgCl_2$ absorbent system was preliminarily studied. The new process can be used to separate and recover CO gas from industrial exhaust gases, such as the off-gas from steelmaking converters.

Key words: carbon monoxide, absorbent, chemical absorption

Atmospheric Dispersion Parameters for High Overhead Pollution Sources Fitted with the Monitored Data from Various Parts of China. Gu Yongrui, Zhang Tong, Wang Dongpu (Inner Mongolian Central Monitoring Station for Environmental Protection, Huhehaote 010010): *Chin. J. Environ. Sci.*, **15**(3), 1994, pp. 42—46

In a calculation of the atmospheric dispersion of emissions from a high overhead source, the atmospheric dispersion parameters given in the National Standards GB3840-91 and the Briggs parameters were found to be no longer suitable. By using the general expression for the Briggs atmospheric dispersion parameters ($\sigma = ax(1+\beta x)^{-1/2}$) to fit the atmospheric dispersion parameters which were actually measured in various parts of China, the fitted parameters were obtained and were found more reasonable as compared with the GB3840-91 and Briggs parameters, and thus have a practical value in use for calculating other atmospheric dispersion parameters.

Key words: atmospheric dispersion, fitting, high overhead sources.

Determination of the Source Intensity of the Gases Released from Municipal Solid Wastes Dumping sites and Their Environmental Impact Assessment. Zhou Zhongping, Zhang Jun (Dept. of Environ. Eng., Tsinghua University, Beijing 100084): *Chin. J. Environ. Sci.*, **15**(3), 1994, pp. 47—52

After taking samples of the gases released from the Beishenshu Municipal Solid Wastes Dumping Site in Beijing and making the qualtative and quantitative analyses of the samples, two methods were used to study the determination of the intensity of the gases releasing sources, by which an assessment was made on the environmental impact of the gases emitted from the dumped garbage. Some countermeasures feasible to control such a pollution were suggested.

Key words: gases release, garbage dumping site, source intensity, EIA.

Forms and Transformation of Chromium Species in Soils. Chen Yingxu, He Zeng' yao et al. (Dept. of Environmental Protection, Zhejiang University of Agriculture, Hangzhou 310029): *Chin. J. Environ. Sci.*, **15**(3), 1994, pp. 53—56

By developing a method for the fractional extractionof chromium species in various binding states in soil, it was found that the extractants of 1 mol/L NH_4Ac, 2 mol/L HCl and 5% H_2O_2-2mol/L HCl in use for a sequential extraction of chromium species from soil can give the exchangeable Cr species, precipitated Cr species, and organics-bound Cr species, respectively. The results show that in the natural soil the Cr speies are present dominantly in a precipitated or residual state. Under the reducing conditions, the Cr species in soil tend to be transformed into those in an organics-bound state. As the soil pH value was lowered, the levels of water soluble Cr species and exchangeable Cr species raised while the levels of Cr species in precipitated or residual state being reduced. The soil pH value can be lowered by adding Cr(Ⅲ) species and raised by adding Cr(Ⅵ) species.

Key words: chromium, soil, fractional extraction, species transformation.

Mathematical Modelling on the Dispersion of Line Sources of Air Pollution. Cheng Zirun, Fu Dafang (Institute of Environmental Engineering, Southeast University, Nanjing 210018): *Chin. J. Environ. Sci.*, **15**(3), 1994, pp. 57—60

Based on the traditional Gaussian dispersion theory, a method has been proposed to calculate the dispersion of line sources of air pollution caused by vehicles runing on road. In this method, a road line source is divided into several elements in which an initial dispersion exists; each of the elements is considered to be a proximate short line source which is passing through the midpoint of the element and is rectangular to the direction of wind, and can be calculated for its dispersion based on the Gaussian Model for rectangular wing, with the concentration