

**Table 6: Production and Atmospheric Release  
HCFC-22** (thousand metric tonnes)

**Expanded Data**

**Reporting Companies only**

(thousand metric tonnes)

	Annual		Cumulative												
	Production	Released	Total			Short Banking Times			Medium Banking Times			Long Banking Times			
			Production	Released	Unreleased	Sales	Released	Unreleased	Sales	Released	Unreleased	Sales	Released	Unreleased	
1943	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
1944	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0
1945	0.1	0.1	0.3	0.2	0.2	0.0	0.0	0.0	0.3	0.1	0.2	0.0	0.0	0.0	0.0
1946	0.1	0.1	0.4	0.2	0.2	0.0	0.0	0.0	0.4	0.2	0.2	0.0	0.0	0.0	0.0
1947	0.1	0.1	0.5	0.3	0.2	0.0	0.0	0.0	0.5	0.3	0.2	0.0	0.0	0.0	0.0
1948	0.2	0.1	0.7	0.4	0.3	0.0	0.0	0.0	0.7	0.4	0.3	0.0	0.0	0.0	0.0
1949	0.3	0.2	1.0	0.6	0.4	0.0	0.0	0.0	1.0	0.5	0.4	0.0	0.0	0.0	0.0
1950	0.8	0.4	1.8	1.0	0.8	0.1	0.1	0.0	1.7	0.9	0.8	0.0	0.0	0.0	0.0
1951	1.0	0.5	2.8	1.5	1.3	0.1	0.1	0.0	2.7	1.4	1.3	0.0	0.0	0.0	0.0
1952	1.6	0.8	4.4	2.4	2.0	0.2	0.2	0.0	4.2	2.2	2.0	0.0	0.0	0.0	0.0
1953	2.2	1.2	6.5	3.6	3.0	0.3	0.3	0.0	6.2	3.3	3.0	0.0	0.0	0.0	0.0
1954	2.9	1.7	9.4	5.2	4.2	0.4	0.4	0.0	9.0	4.8	4.2	0.0	0.0	0.0	0.0
1955	3.7	2.2	13.2	7.4	5.8	0.6	0.6	0.0	12.6	6.8	5.7	0.0	0.0	0.0	0.0
1956	6.1	3.4	19.2	10.8	8.4	0.9	0.8	0.0	18.4	10.0	8.4	0.0	0.0	0.0	0.0
1957	6.3	4.0	25.5	14.8	10.8	1.2	1.1	0.0	24.4	13.7	10.7	0.0	0.0	0.0	0.0
1958	7.6	4.9	33.1	19.6	13.5	1.5	1.4	0.1	31.6	18.2	13.4	0.0	0.0	0.0	0.0
1959	11.2	6.9	44.4	26.5	17.9	2.0	1.9	0.1	42.3	24.6	17.8	0.0	0.0	0.0	0.0
1960	12.2	8.1	56.5	34.6	22.0	2.6	2.5	0.1	53.9	32.1	21.8	0.0	0.0	0.0	0.0
1961	12.2	8.7	68.7	43.3	25.4	3.1	3.0	0.1	65.5	40.3	25.2	0.1	0.0	0.0	0.0
1962	15.4	10.8	84.1	54.1	30.1	3.8	3.7	0.1	80.2	50.3	29.9	0.1	0.0	0.1	0.1
1963	17.6	12.6	101.7	66.7	35.0	4.6	4.5	0.1	97.0	62.2	34.8	0.1	0.0	0.1	0.1
1964	22.4	15.5	124.0	82.2	41.9	5.6	5.5	0.2	118.3	76.7	41.6	0.1	0.0	0.1	0.1
1965	25.1	18.0	149.1	100.2	49.0	6.8	6.6	0.2	142.2	93.6	48.7	0.1	0.0	0.1	0.1
1966	31.5	21.9	180.6	122.0	58.6	8.2	8.0	0.2	172.3	114.0	58.2	0.1	0.0	0.1	0.1
1967	37.3	26.0	218.0	148.1	69.9	9.9	9.6	0.3	207.9	138.4	69.5	0.2	0.0	0.1	0.1
1968	46.0	31.6	264.0	179.6	84.4	12.0	11.6	0.4	251.8	167.9	83.8	0.2	0.0	0.2	0.2
1969	56.1	38.2	320.1	217.8	102.3	14.6	14.1	0.4	305.3	203.6	101.6	0.2	0.0	0.2	0.2
1970	56.1	41.4	376.1	259.2	116.9	17.1	16.7	0.4	358.8	242.5	116.2	0.3	0.0	0.2	0.2
1971	60.6	45.8	436.7	305.1	131.7	19.9	19.4	0.5	416.5	285.6	130.9	0.3	0.0	0.3	0.3
1972	63.3	50.1	500.0	355.2	144.8	22.7	22.2	0.5	476.9	332.9	144.0	0.4	0.0	0.3	0.3
1973	74.3	57.5	574.3	412.7	161.7	26.1	25.5	0.6	547.8	387.1	160.7	0.4	0.1	0.4	0.4
1974	83.4	65.0	657.7	477.6	180.1	29.9	29.3	0.6	627.3	448.3	179.0	0.5	0.1	0.4	0.4
1975	75.0	65.7	732.7	543.3	189.4	33.3	32.7	0.6	698.8	510.5	188.4	0.5	0.1	0.5	0.5
1976	90.7	74.0	823.4	617.3	206.1	37.4	36.7	0.7	785.4	580.5	204.9	0.6	0.1	0.5	0.5
1977	101.4	82.4	924.8	699.7	225.0	42.0	41.3	0.8	882.0	658.4	223.7	0.7	0.1	0.6	0.6
1978	111.7	60.3	1036.4	760.1	276.4	47.1	46.3	0.9	988.6	713.7	274.9	0.8	0.1	0.6	0.6
1979	117.9	62.2	1154.3	822.3	332.0	52.5	51.6	0.9	1101.0	770.6	330.4	0.8	0.1	0.7	0.7
1980	126.3	75.1	1280.6	897.4	383.3	58.2	57.2	1.0	1221.5	840.0	381.5	0.9	0.2	0.8	0.8
1981	130.8	87.5	1411.5	984.9	426.6	64.2	63.2	1.0	1346.2	921.5	424.7	1.0	0.2	0.9	0.9
1982	123.6	100.4	1535.1	1085.2	449.8	70.0	69.0	1.0	1463.9	1016.1	447.9	1.2	0.2	1.0	1.0

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	Production	Released	Production	Released	Unreleased	Sales	Released	Unreleased	Sales	Released	Unreleased	Sales	Released	Unreleased
1983	143.9	114.0	1679.0	1199.3	479.7	76.8	75.6	1.2	1600.9	1123.5	477.4	1.3	0.2	1.1
1984	152.4	120.2	1831.3	1319.5	511.8	84.5	83.2	1.3	1745.4	1236.0	509.3	1.4	0.2	1.2
1985	153.4	120.8	1984.7	1440.3	544.4	93.1	91.6	1.5	1890.1	1348.4	541.7	1.6	0.3	1.3
1986	165.0	123.6	2149.7	1563.9	585.8	102.0	100.5	1.5	2046.0	1463.1	582.9	1.7	0.3	1.4
1987	173.3	128.9	2323.0	1692.8	630.2	111.9	110.2	1.7	2209.2	1582.2	627.0	1.9	0.4	1.6
1988	203.5	141.4	2526.6	1834.2	692.4	127.9	125.2	2.7	2396.5	1708.6	687.9	2.2	0.4	1.8
1989	219.5	157.4	2746.1	1991.6	754.5	153.1	148.8	4.3	2590.6	1842.4	748.2	2.5	0.4	2.0
1990	213.7	171.2	2959.8	2162.8	797.0	184.1	178.8	5.3	2771.4	1983.5	788.0	4.3	0.5	3.8
1991	236.8	177.5	3196.6	2340.3	856.3	211.2	206.6	4.6	2973.4	2133.0	840.4	12.0	0.8	11.3
1992	245.7	187.8	3442.4	2528.2	914.2	241.5	236.4	5.1	3180.2	2290.6	889.5	20.7	1.2	19.5
1993	240.6	189.4	3683.0	2717.6	965.4	264.3	260.4	3.9	3384.5	2455.3	929.2	34.2	1.9	32.4
1994	239.4	195.5	3922.4	2913.1	1009.3	289.1	284.9	4.2	3592.0	2625.5	966.5	41.3	2.7	38.6
1995	243.5	203.1	4165.9	3116.2	1049.7	316.9	312.2	4.7	3795.2	2800.2	995.0	53.8	3.8	50.0
1996	267.5	209.6	4433.4	3325.7	1107.7	346.0	341.0	4.9	4025.6	2979.7	1045.9	61.9	5.0	56.9
1997	246.9	210.7	4680.4	3536.4	1143.9	373.2	368.6	4.6	4241.6	3161.5	1080.1	65.5	6.3	59.2
1998	272.0	208.5	4952.3	3745.0	1207.4	394.0	390.4	3.5	4482.1	3346.7	1135.4	76.3	7.8	68.5
1999	248.6	211.8	5200.9	3956.8	1244.1	417.4	413.4	4.0	4698.6	3533.8	1164.7	84.9	9.5	75.4
2000	239.2	218.7	5440.1	4175.4	1264.7	444.1	439.6	4.5	4903.2	3724.5	1178.8	92.7	11.4	81.3
2001	213.3	218.0	5653.4	4393.4	1260.0	467.8	463.7	4.0	5089.2	3916.3	1172.9	96.4	13.3	83.1
2002	194.0	240.8	5847.4	4634.2	1213.1	522.8	513.5	9.4	5221.0	4105.4	1115.6	103.5	15.4	88.1
2003	187.3	209.8	6034.6	4844.0	1190.6	537.0	534.6	2.4	5382.1	4291.7	1090.4	115.5	17.7	97.8

**Notes**

In previous reports, from 1996 to 2002 fugitive emissions were incorrectly calculated. This has now been rectified with small changes to the data for the years identified in red.

Emissions are calculated from production and categorised sales using "emission functions".

Of the sales into "Short Banking Times" (mainly open cell foam), 83% are released in the year of manufacture and the remainder in the year following.

Emission functions for releases from "Medium Banking Times" (predominantly refrigeration) are now recognised to have changed in time.

The functions used here are described in McCulloch, Midgley and Lindley, Recent Changes in the Production and Global Atmospheric Emissions of Chlorodifluoromethane (HCFC-22), *submitted to Atmospheric Environment, 2005*. They comprise:

Up to 1977: Zero use in hermetic systems and 100% use in systems with a rapid initial loss (30% of charge) and subsequent total loss of charge over 10 years

1978 to 1984: 10% hermetic, 10% use in systems with rapid initial loss

1985 to 1993: 20% hermetic, zero use in systems with rapid initial loss

1994 onwards: 30% hermetic, zero use in systems with rapid initial loss

Data affected are identified by green or blue shading.

Material in "Long Banking Times" applications is released at the rate of 2%/year.

(McCulloch A., P.M. Midgley and P. Ashford, Releases of Refrigerant Gases (CFC-12, HCFC-22 and HFC-134a) to the Atmosphere, Atmos. Environ., 37, 889-902, 2003)