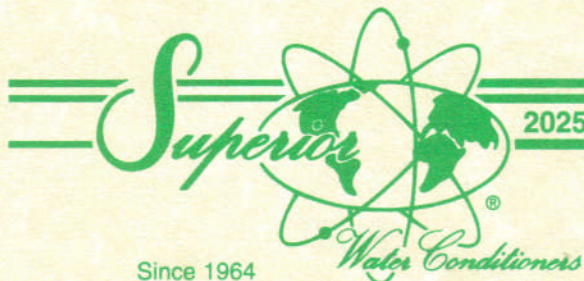


Superior Manufacturing Division

MAGNATECH CORPORATION



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U.S. and Foreign Patents

December 1994

Dear Friend,

Enclosed please find a letter from Eli Lilly and Company (Lilly) dated August 30, 1994. The letter describes results from a one year trial which was conducted to compare the overall effectiveness and performance of *magnetic vs. chemical* treatment on cooling towers. The letter concludes that:

"the magnetic water conditioning system proved to be effective compared to conventional chemical tower water treatment."

Lilly has authorized Superior to disclose to potential customers this letter which details the results of Lilly's tests on magnetic water conditioning applications. The only version of this letter which you may disclose is the version which we have provided to you. **DO NOT** change or alter this letter in any way.

Because Superior has signed a very stringent agreement with Lilly, we must use this letter discriminately. **SHOW IT ONLY** to customers who are interested in buying Superior Water Conditioners, not to competitors or skeptics who are only interested in harassing us or Lilly in an attempt to discredit magnetics. In addition, **WE MUST NOT ALLOW COPIES TO BE MADE AND CIRCULATED**. If you need more copies for your sales representatives, please advise us and we will provide them to you.

LILLY, IN ITS ABSOLUTE DISCRETION, MAY TERMINATE OUR RIGHT TO USE THIS LETTER AND LILLY'S NAME WITH ONE DAY'S WRITTEN NOTICE.

Lilly is very valuable to us, and we must not jeopardize in any way our good relationship with them.

We are very pleased and excited about these results. Best wishes for increased sales! Thank you for your cooperation in preserving the good will of someone that is willing to help, even though great pressure from the outside (and some from the inside) has been applied to prevent the Lilly letter from ever being typed, documenting the results.

Charles H. Sanderson
Magnatech, Inc.
Superior Manufacturing Division







Eli Lilly and Company

Lilly Corporate Center
Indianapolis, Indiana 46285
(317) 276-2000

August 30, 1994

Charles H. Sanderson, Sr.
Superior Manufacturing Company
2015 S. Calhoun
P.O. Box 13343
Fort Wayne, IN 46868-3343

Dear Mr. Sanderson:

The Environmentalist 2000 magnetic water conditioning unit (conditioner model numbers CT8000APD and SF5000AK) was introduced to Eli Lilly and Company corporate headquarters (LCC) during 1992, to a wooden, counter-flow, forced draft, 8000 ton cooling tower on administration building M22A. The system was to replace all chemicals used to treat the tower water utilized for two centrifugal chiller condensers of 2000 and 4000 ton capacity.

The M22A magnetic system was compared to a chemically treated tower water system cooling seven centrifugal chillers with 19,000 tons of capacity in utility building M78 at LCC. M78 cooling towers are concrete, counter-flow, forced draft units with 29,000 tons capacity. A one year trial was conducted from January, 1993, to December, 1993, to compare the overall effectiveness and performance of magnetic to chemical treatment.

Two test heat exchangers were utilized to compare M22A to M78's tower water by modeling the chiller condensers in each building. Conductivity meters, pH probes, temperature transmitters, corrosion coupons, blowdown meters, and make-up meters were used to measure the two water streams. In addition, weekly grab samples were taken from each system to measure the cycles of concentration,

Mr. Charles H. Sanderson, Sr.

Page 2

August 30, 1994

Ryzner index, bacterial count, average total hardness, calcium hardness (CaCO_3), alkalinity, and chloride levels.

The magnetic system used 70% less blowdown and removed 51% more calcium (CaCO_3) from the tower water than chemical treatment. The Ryzner index for the magnetic system was fairly neutral while the chemical system indicated a scaling condition. The chillers in M22A ran 11% more efficiently than the previous year when they were chemically treated.

Sulfuric acid, sodium hydroxide, phosphonic acid and defoaming agents were eliminated from M22A's tower water. However, chlorine and bromine were utilized to prevent high bacteria levels, slime, and algae growth. Nevertheless, the magnetic water conditioning system proved to be effective compared to conventional chemical tower water treatment.

The data from this trial should not: 1) be considered an endorsement by Eli Lilly and Company of the use of magnetic water conditioning for all cooling tower applications; 2) be extrapolated or interpreted in an effort to attempt to support any other cooling tower application or any other application. The results set forth in this letter and detailed in the attached spreadsheets are specific to this trial and are the exclusive property of Eli Lilly and Company.

Sincerely,

ELI LILLY AND COMPANY



Eric E. Sussman, Plant Engineer
Environmental Control and Utilities

MAGNETIC (M22A) VS CHEMICAL TREATMENT (M78) SYSTEMS

	DATE	CORR RATE (mpy)	ACTUAL RUNNING TON-HR/MONTH	BLOWDOWN GAL/MONTH	DRAIN VS TONS (GAL/TON-HR)	MAKE-UP GAL/MONTH	DRAIN VS MAKE-UP
M22A	Jan-93		717,573	78,933	11%	464,312	17%
	Feb-93		730,884	88,750	12%	522,059	17%
	Mar-93		884,407	85,479	10%	502,818	17%
	Apr-93		582,357	64,059	11%	384,350	17%
	May-93		953,024	36,320	4%	966,600	4%
	Jun-93	3.65	191,021	57,306	30%	318,367	18%
	Jul-93		604,039	118,212	30%	656,733	18%
	Aug-93		1,399,940	287,015	21%	1,603,180	18%
	Sep-93		882,150	298,480	34%	1,058,440	28%
	Oct-93		741,266	354,247	48%	800,020	44%
	Nov-93		827,001	443,610	54%	826,840	54%
	Dec-93		28,465	15,371	54%	31,369	49%
	Feb-94	5.09					
AVE/TOTALS			8,542,127	1,927,782	26%	8,135,087	25%
M78	Jan-93		1,057,793	1,163,572	110%	3,117,825	37%
	Feb-93		1,231,773	1,354,950	110%	2,865,155	47%
	Mar-93		1,409,598	1,550,558	110%	3,554,522	44%
	Apr-93		1,750,633	959,000	55%	4,057,313	24%
	May-93		2,267,234	630,560	28%	4,943,368	13%
	Jun-93	3.00	4,945,915	909,498	18%	22,494,379	4%
	Jul-93		6,227,617	5,300,589	85%	23,300,595	23%
	Aug-93		5,408,028	3,028,100	56%	16,214,054	19%
	Sep-93		2,812,268	1,908,990	68%	8,165,447	23%
	Oct-93		1,853,421	2,125,120	115%	6,255,820	34%
	Nov-93		1,190,655	1,769,500	149%	2,838,006	62%
	Dec-93		1,360,164	1,936,941	142%	4,035,294	48%
	Feb-94	3.67					
AVE/TOTALS			31,515,099	22,637,378	87%	101,841,778	31%
RESULT AND CONCLUSION			CAPACITIES: M22A - 6,000 TONS M78 - 19,000 TONS		MAG 70% LESS BLOW- DOWN		CHEMICALS BLOWDOWN MORE

	DATE	CORR RATE (mpy)	ACTUAL RUNNING TON-HR/MONTH	BLOWDOWN GAL/MONTH	DRAIN VS TONS (GAL/TON-HR)		
CITY WATER MAKE-UP	Jan-93						
	Feb-93						
	Mar-93						
	Apr-93						
	May-93						
	Jun-93						
	Jul-93						
	Aug-93						
	Sep-93						
	Oct-93						
	Nov-93						
	Dec-93						

NOTES

- 1) Italicized (TON-HR/MONTH) data, BLOWDOWN (GAL/MONTH) data, and DRAIN VS TONS (GAL/TON-HR) ratios are estimated from similar running conditions in previous months.
- 2) Corrosion coupons placed in the M22A and M78 tower systems from Feb-93 through May-93 and from Jun-93 through Feb-94 were used to determine yearly corrosion rates in Jun-93 and Feb-94, respectively.
- 3) The higher Feb-94 corrosion data for M22A may not be a result of problems with the magnetic water treatment program. The M22A chillers ran a very small percentage of the time between Dec-93 and Feb-94. This condition of no water circulation across the corrosion coupons often causes the corrosion rate to accelerate.
- 4) Corrosion rates shown are for mild steel coupons. M22A Corrosion rates from three copper coupons were negligible at .06mpy & .037mpy (M22A north pump) and .055mpy (M22A south pump) from Feb-93 to May-93.

MAGNETIC (M22A) VS CHEMICAL TREATMENT (M78) SYSTEMS

DATE	RYZNER INDEX	AVE CYCLES	BACTERIAL COUNT	AVE TOT HARD ppm	Ca HARDNESS (as CaCO3) ppm
Jan-93,M22A	6.41	4.7	1.00E+01	470	265
Feb-93	3.6	4.6	1.00E+02	...	780
Mar-93	4.1	5.5	1.00E+02	...	857
Apr-93	4.23	7.25	1.00E+03	1100	433
May-93	4.4	13	1.00E+05	1570	503
Jun-93	...	...	...	1340	980
Jul-93	...	...	...	920	730
Aug-93	5.1	5.6	1.00E+01	1007	321
Sep-93	5.4	4.7	1.00E+05	769	308
Oct-93	6.06	3.6	1.00E+04	633	193
Nov-93	6	4.3	1.00E+05	570	219
Dec-93	...	...	...	...	...
AVE/TOTALS	5.03	5.92	1.00E+04	874	431
Jan-93,M78	4.65	8.6	1.00E+02	1360	810
Feb-93	5.3	5.75	1.00E+02	...	1373
Mar-93	5.6	3	1.00E+01	...	480
Apr-93	5.3	3.75	1.00E+02	1250	895
May-93	4.9	5	1.00E+04	1427	1003
Jun-93	4.86	4.75	1.00E+04	1230	990
Jul-93	5.05	4.3	1.00E+04	1133	888
Aug-93	6.3	5.3	1.00E+05	1737	1100
Sep-93	4.8	4.7	1.00E+04	1186	904
Oct-93	4.7	4.1	1.00E+04	1081	837
Nov-93	4.3	2.6	1.00E+04	662	465
Dec-93	4.4	2.8	...	730	510
AVE/TOTALS	5.01	4.55	1.00E+04	1180	886
	LAST 4 MONTHS OF MAGNET INDICATE NEUTRAL, M78 SCALE	LAST FOUR MONTHS SIMILAR	FAIRLY SIMILAR	MAGNET LOWER	MAG REMOVES 51% MORE Ca THAN CHEMICALS

DATE	RYZNER INDEX	AVE CYCLES	BACTERIAL COUNT	AVE TOT HARD ppm	Ca HARDNESS (as CaCO3) ppm
Jan-93,C.W.			
Feb-93				322	230/207
Mar-93				342	230/217
Apr-93				280/313	200/204
May-93				300	193
Jun-93				232	155
Jul-93			
Aug-93				353	246
Sep-93				278	202
Oct-93				278	202
Nov-93				320	260
Dec-93				315	206

NOTES

- 1) For LCC city water, numbers to the right of a slash "/" and italicized data were measured by an independent laboratory.
- 2) Bacterial count data for M22A in Aug-93 is from 8/18 thru 8/31. From 8/1 thru 8/17, the bacterial count varied from 1.00E+04 to 1.00E+07.
- 3) M22A Jun-93 and Jul-93 data which is in bold letters and italicized was not used in this analysis due to the tower water system being taken down for scaling and operational problems.
- 4) C.W. stands for Indianapolis city water

MAGNETIC (M22A) VS CHEMICAL TREATMENT (M78) SYSTEMS

DATE	%Ca HARDNESS	ALKALINITY (as CaCO3) ppm	CHLORIDES (as Cl) ppm	AVE pH	CONDUCTIVITY umhos/cm	35K GALLONS
Jan-93,M22A	56%	295	106	8.30	1730	0
Feb-93	...	593	187	8.43	2293	0
Mar-93	...	423	220	9.10	2500	0
Apr-93	39%	460	290	8.98	2325	0
May-93	32%	521	530	8.87	2083	0
Jun-93	73%	600	440	8.90	1450	0
Jul-93	79%	500	280	8.65	1090	0
Aug-93	32%	320	316	8.70	2606	0
Sep-93	40%	314	259	8.36	1925	0
Oct-93	30%	269	205	8.24	1875	0
Nov-93	38%	272	192	8.20	1582	0
Dec-93	...	...	...	...	...	...
AVE/TOTALS	38%	385	256	8.58	2102	0
Jan-93,M78	60%	156	259	8.04	3800	70
Feb-93	...	167	230	8.30	3273	25
Mar-93	...	160	110	8.27	1500	81
Apr-93	72%	183	150	8.25	2255	54
May-93	70%	296	202	8.20	2620	138
Jun-93	80%	273	190	8.17	2513	329
Jul-93	78%	227	173	8.25	2383	679
Aug-93	63%	144	298	8.23	3200	230
Sep-93	76%	252	262	8.17	2803	118
Oct-93	77%	248	228	8.25	2575	242
Nov-93	70%	424	113	8.18	2760	240
Dec-93	70%	445	128	8.19	1950	270
AVE/TOTALS	72%	248	195	8.21	2636	1496
	MAG REMOVES MORE Ca THAN CHEMICALS	MAG HIGHER, pH SHOULD BE HIGHER	MAG SLIGHTLY HIGHER	SIMILAR LAST FOUR MONTHS	MAG LOWER, CONTROLLED BY BLOWDOWN	MAGNET ELIMINATES NEED

DATE	%Ca HARDNESS	ALKALINITY (as CaCO3) ppm	CHLORIDES (as Cl) ppm	AVE pH	CONDUCTIVITY umhos/cm	Magnesium ppm Hardness
Jan-93,C.W.	...	171	34	7.65	...	...
Feb-93	64%	170/219	40/68	7.6/8.1	580/783	116
Mar-93	63%	170/221	40/62	7.6/7.8	580/812	125
Apr-93	71%/65%	240/199	40/40	7.6/7.8	580/657	110
May-93	64%	206	44	8.40	680	107
Jun-93	67%	135	36	7.40	518	77
Jul-93	...	...	...	...	...	...
Aug-93	70%	240	31	8.60	650	106
Sep-93	73%	212	55	7.60	727	...
Oct-93	73%	212	55	7.60	727	...
Nov-93	81%	300	45	7.60	740	...
Dec-93	65%	197	41	7.10	530	109

NOTES

- 1) For LCC city water, numbers to the right of a slash "/" and italicized data were measured by an independent laboratory.
- 2) Bacterial count data for M22A in Aug-93 is from 8/18 thru 8/31. From 8/1 thru 8/17, the bacterial count varied from 1.00E+04 to 1.00E+07.
- 3) M22A Jun-93 and Jul-93 data which is in bold letters and italicized was not used in this analysis due to the tower water system being taken down for scaling and operational problems.
- 4) Monthly 35K data in gallons are not accurate due to estimating tank level through site glass. However, yearly total is accurate and is based upon actual delivery data.

MAGNETIC (M22A) VS CHEMICAL TREATMENT (M78) SYSTEMS

DATE	SULF. ACID GALLONS	C77P BROMINE LBS
Jan-93,M22A	0	0
Feb-93	0	0
Mar-93	0	0
Apr-93	0	0
May-93	0	0
Jun-93	0	0
Jul-93	0	0
Aug-93	0	50
Sep-93	0	300
Oct-93	0	150
Nov-93	0	250
Dec-93	...	...
AVE/TOTALS	0	975
Jan-93,M78	150	0
Feb-93	502	0
Mar-93	327	0
Apr-93	325	0
May-93	761	350
Jun-93	996	250
Jul-93	1090	875
Aug-93	1136	695
Sep-93	985	650
Oct-93	475	300
Nov-93	558	150
Dec-93	0	0
AVE/TOTALS	7305	3700
	MAGNET ELIMINATES NEED	CHEMICALS NEEDED TO KILL BACTERIA

DATE	COPPER (as Cu) ppm	IRON (as Fe) ppm	SODIUM (as Na) ppm	SILICA TOTAL (as SiO2) ppm
Jan-93,C.W.	...	...	...	...
Feb-93	<i>L .05</i>	<i>0.11</i>	<i>41</i>	<i>5.60</i>
Mar-93	<i>L .05</i>	<i>L .05</i>	<i>46</i>	<i>L 5.0</i>
Apr-93	<i>L .05</i>	<i>0.08</i>	<i>23</i>	<i>8.60</i>
May-93	<i>L .05</i>	<i>0.05</i>	<i>29</i>	<i>6.30</i>
Jun-93	<i>L .05</i>	<i>0.13</i>	<i>18</i>	<i>8.40</i>
Jul-93	...	...	...	...
Aug-93	<i>L .05</i>	<i>0.1</i>	<i>24</i>	<i>9.20</i>
Sep-93	...	...	...	...
Oct-93	...	...	...	...
Nov-93	...	...	...	...
Dec-93	<i>L .05</i>	<i>L .05</i>	<i>49</i>	<i>L 5.0</i>

NOTES

- 1) For LCC city water, italicized data was measured by an independent laboratory.
- 2) Bacterial count data for M22A in Aug-93 is from 8/18 thru 8/31. From 8/1 thru 8/17, the bacterial count varied from 1.00E+04 to 1.00E+07.
- 3) M22A Jun-93 and Jul-93 data which is in bold letters and italicized was not used in this analysis due to the tower water system being taken down for scaling and operational problems.
- 4) Monthly sulfuric acid (in gallons) and C77P (in lbs.) bromine data are not accurate due to estimating tank level through site glass. However, yearly total is accurate and is based upon actual delivery data.