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# Rare Earths and the Recovery of Administratium from Phosphates

Vaughn Astley

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Melbourne, Australia**

**31<sup>st</sup> March to 2<sup>nd</sup> April, 2015**

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# Phosphates

## A Potential Major Source for Rare Earths and Uranium

- **Phosphate Deposits Contain Uranium**
- **Uranium Recovery is a Well-Tested Additional Opportunity in Phosphoric Acid Production**
  - **Range: 0.1-7 Kg/Tonne of  $P_2O_5$**
  - **Typically: 0.3-0.6 Kg U per Tonne  $P_2O_5$**
  - **Price: Volatile, but in 2007,  $U_3O_8$  Reached \$300/KG**
  - **Currently About \$80/Kg on Spot Market and ~\$150/Kg for Some Long Term Contracts**



# Phosphates

## A Potential Major Source for Rare Earths and Uranium

- **Phosphate Deposits Contain Rare Earths**
- **Much test work has been carried out to determine the distribution of REE in the various phosphate beneficiation size fractions in both product fractions as well as waste materials in the 90's.**

# Phosphates

## A Potential Major Source for Rare Earths and Uranium

- **Heavy Minerals are present in varying degrees within the phosphate ore matrix.**
- **Sampling for heavy minerals was carried out at the Four Corners and Kingsford Mines, as well as Fort Green and Hopewell.**
- **Minerals such as Monasite, and Xenotime were found.**
- **Let me tell you a story.....**

# Rare Earths

- **Once Upon A time...**
- **In October of 2000, on a Friday.**
- **About tea time**
- **I believe it was the 13<sup>th</sup>.**
  
- **We were Looking at Course Phosphate Pebble, 6-10mm, as a source of Rare Earth Elements Down in the Mines.**

# Rare Earths

- **After Partaking in Several Excellent Cups of Tea; Black Pekoe if I Recall Correctly.**
- **We had been Slaving Away for Many Hours doing Flotation Tests and other Various Separation Techniques....**
- **We Noticed some Strange Phenomena....**

# Rare Earths

- **We Seamed to have Lots of Time to Get the Work Done!**
- **When Finished and Returned to Civilization We Found we had Missed Dinner.!!!**

# Rare Earths

- **We Appeared to have Discovered an Interesting Heavy Mineral.**
- **The IMC Reagent Group Developed a New Heavy Media Reagent to Separate it from the Regular Course Material we had Processed. The tails were Forwarded to Our Competitors.**
- **Discovery Was Announced to Senior IMC Management on April 1<sup>st</sup> 2001.**

# **Administratium**

- **We Appeared to have Inadvertently Discovered the Heaviest Element Known to Science. This Startling New Discovery has been Tentatively Named Administratium (Pat. Pending).**

# Administratum

- **Properties:-**



# Rare Earths in i-Phones

- **Europium:** Without Europium, the i-Phone Would not be Able to Display Lifelike Reds.
- **Neodymium:** Allows Permanent Magnets to Function at Higher Temperatures, or your i-Phone Would be Bigger and Less Efficient.
- **Dysprosium & Terbium:** For Stabilizing the Coercivity of Magnets. The i-Phone Would have to Operate at Lower Temps, thus Slower and Less Effective. Also Poor Greens!
- **Administratium:** Causes i-Phones to be SLOW!

# Administratium

- **This New Element has No Protons or Electrons, thus Should Have an Atomic Number of 0.**
- **But the Other 114 spots were Taken, so We Put it at the End. #115**
- **Symbol..... Ad**

# Administratium

## PERIODIC TABLE OF THE ELEMENTS

GROUP

PERIOD

RELATIVE ATOMIC MASS (A<sub>r</sub>)

GROUP IUPAC

GROUP CAS

ATOMIC NUMBER

SYMBOL

ELEMENT NAME

Legend:

- Metal
- Semimetal
- Nonmetal
- Alkali metal
- Alkaline earth metal
- Transition metals
- Lanthanide
- Actinide
- Semiometal
- Chalcogens element
- Halogens element
- Noble gas

STANDARD STATE (25 °C, 101 kPa)

Ne - gas, Fe - solid, Ga - liquid, Tc - synthetic

1	2	13	14	15	16	17	18
1	2	13	14	15	16	17	18
3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34
37	38	39	40	41	42	43	44
51	52	53	54	55	56	57	58
65	66	67-71	72	73	74	75	76
79	80	81	82	83	84	85	86
87	88	89-103	104	105	106	107	108
119	120	121	122	123	124	125	126
133	134	135	136	137	138	139	140
151	152	153	154	155	156	157	158
171	172	173	174	175	176	177	178
189	190	191	192	193	194	195	196
209	210	211	212	213	214	215	216
227	228	229	230	231	232	233	234
251	252	253	254	255	256	257	258
271	272	273	274	275	276	277	278
291	292	293	294	295	296	297	298
309	310	311	312	313	314	315	316
327	328	329	330	331	332	333	334
351	352	353	354	355	356	357	358
371	372	373	374	375	376	377	378
391	392	393	394	395	396	397	398
409	410	411	412	413	414	415	416
431	432	433	434	435	436	437	438
451	452	453	454	455	456	457	458
471	472	473	474	475	476	477	478
491	492	493	494	495	496	497	498
511	512	513	514	515	516	517	518
531	532	533	534	535	536	537	538
551	552	553	554	555	556	557	558
571	572	573	574	575	576	577	578
591	592	593	594	595	596	597	598
611	612	613	614	615	616	617	618
631	632	633	634	635	636	637	638
651	652	653	654	655	656	657	658
671	672	673	674	675	676	677	678
691	692	693	694	695	696	697	698
711	712	713	714	715	716	717	718
731	732	733	734	735	736	737	738
751	752	753	754	755	756	757	758
771	772	773	774	775	776	777	778
791	792	793	794	795	796	797	798
811	812	813	814	815	816	817	818
831	832	833	834	835	836	837	838
851	852	853	854	855	856	857	858
871	872	873	874	875	876	877	878
891	892	893	894	895	896	897	898
911	912	913	914	915	916	917	918
931	932	933	934	935	936	937	938
951	952	953	954	955	956	957	958
971	972	973	974	975	976	977	978
991	992	993	994	995	996	997	998
1011	1012	1013	1014	1015	1016	1017	1018
1031	1032	1033	1034	1035	1036	1037	1038
1051	1052	1053	1054	1055	1056	1057	1058
1071	1072	1073	1074	1075	1076	1077	1078
1091	1092	1093	1094	1095	1096	1097	1098
1111	1112	1113	1114	1115	1116	1117	1118
1131	1132	1133	1134	1135	1136	1137	1138
1151	1152	1153	1154	1155	1156	1157	1158
1171	1172	1173	1174	1175	1176	1177	1178
1191	1192	1193	1194	1195	1196	1197	1198
1211	1212	1213	1214	1215	1216	1217	1218
1231	1232	1233	1234	1235	1236	1237	1238
1251	1252	1253	1254	1255	1256	1257	1258
1271	1272	1273	1274	1275	1276	1277	1278
1291	1292	1293	1294	1295	1296	1297	1298
1311	1312	1313	1314	1315	1316	1317	1318
1331	1332	1333	1334	1335	1336	1337	1338
1351	1352	1353	1354	1355	1356	1357	1358
1371	1372	1373	1374	1375	1376	1377	1378
1391	1392	1393	1394	1395	1396	1397	1398
1411	1412	1413	1414	1415	1416	1417	1418
1431	1432	1433	1434	1435	1436	1437	1438
1451	1452	1453	1454	1455	1456	1457	1458
1471	1472	1473	1474	1475	1476	1477	1478
1491	1492	1493	1494	1495	1496	1497	1498
1511	1512	1513	1514	1515	1516	1517	1518
1531	1532	1533	1534	1535	1536	1537	1538
1551	1552	1553	1554	1555	1556	1557	1558
1571	1572	1573	1574	1575	1576	1577	1578
1591	1592	1593	1594	1595	1596	1597	1598
1611	1612	1613	1614	1615	1616	1617	1618
1631	1632	1633	1634	1635	1636	1637	1638
1651	1652	1653	1654	1655	1656	1657	1658
1671	1672	1673	1674	1675	1676	1677	1678
1691	1692	1693	1694	1695	1696	1697	1698
1711	1712	1713	1714	1715	1716	1717	1718
1731	1732	1733	1734	1735	1736	1737	1738
1751	1752	1753	1754	1755	1756	1757	1758
1771	1772	1773	1774	1775	1776	1777	1778
1791	1792	1793	1794	1795	1796	1797	1798
1811	1812	1813	1814	1815	1816	1817	1818
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1851	1852	1853	1854	1855	1856	1857	1858
1871	1872	1873	1874	1875	1876	1877	1878
1891	1892	1893	1894	1895	1896	1897	1898
1911	1912	1913	1914	1915	1916	1917	1918
1931	1932	1933	1934	1935	1936	1937	1938
1951	1952	1953	1954	1955	1956	1957	1958
1971	1972	1973	1974	1975	1976	1977	1978
1991	1992	1993	1994	1995	1996	1997	1998
2011	2012	2013	2014	2015	2016	2017	2018
2031	2032	2033	2034	2035	2036	2037	2038
2051	2052	2053	2054	2055	2056	2057	2058
2071	2072	2073	2074	2075	2076	2077	2078
2091	2092	2093	2094	2095	2096	2097	2098
2111	2112	2113	2114	2115	2116	2117	2118
2131	2132	2133	2134	2135	2136	2137	2138
2151	2152	2153	2154	2155	2156	2157	2158
2171	2172	2173	2174	2175	2176	2177	2178
2191	2192	2193	2194	2195	2196	2197	2198
2211	2212	2213	2214	2215	2216	2217	2218
2231	2232	2233	2234	2235	2236	2237	2238
2251	2252	2253	2254	2255	2256	2257	2258
2271	2272	2273	2274	2275	2276	2277	2278
2291	2292	2293	2294	2295	2296	2297	2298
2311	2312	2313	2314	2315	2316	2317	2318
2331	2332	2333	2334	2335	2336	2337	2338
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2451	2452	2453	2454	2455	2456	2457	2458
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2611	2612	2613	2614	2615	2616	2617	2618
2631	2632	2633	2634	2635	2636	2637	2638
2651	2652	2653	2654	2655	2656	2657	2658
2671	2672	2673	2674	2675	2676	2677	2678
2691	2692	2693	2694	2695	2696	2697	2698
2711	2712	2713	2714	2715	2716	2717	2718
2731	2732	2733	2734	2735	2736	2737	2738
2751	2752	2753	2754	2755	2756	2757	2758
2771	2772						

# Administratium

- It does, however, have 1 Neutron, 125 Assistant Neutrons, 75 Vice-Neutrons, and 111 Assistant Vice-Neutrons, Giving it an Atomic Mass of 312.

# **Administratium**

- **These 312 Particles are Held Together by a Brobdignagian Electromagnetic Force Comprised of Lilliputian Particles Called Peons.**
- **Which are Surrounded by Vast Quantities of Lepton-Like Particles Called Morons.**

# **Administratium**

- **Since it Has No Electrons, Administratium is Inert.**
- **However, it Can be Detected as it Impedes Every Reaction With Which it Comes Into Contact.**
- **Even in Proximity it Hinders Action.**

# **Administratium**

- **According to Researchers, a Minute Amount of Administratium Causes One Reaction to Take Over Four Days to Complete When it Would Normally Take Less Than One Minute.**

# **Administratium**

- **Administratium is Indeed Not Stable.**
- **It has a Normal Half-Life of Approximately Three Years.**
- **It Does Not Decay However!!!!**



# Administratum

- **Instead it Undergoes a Spontaneous Reorganization in Which a Portion of the Assistant Neutrons, Vice-Neutrons, and Assistant Vice-Neutrons Exchange Energy Levels.**

# Administratium

- **In fact, an Administratium Sample's Mass will Actually Increase Over Time, Since with Each Re-Organization Some of the Morons and Peons Inevitably Become Neutrons, Forming New Isotopes.**

# **Administratium**

- **This Characteristic of Moron Promotion Leads Some Scientists to Speculate that Administratium is Spontaneously Formed Whenever Morons Reach a Certain Quantity, and Also If the Ratio of Morons to Peons Exceeds 10%.**

# **Administratium**

- **This Hypothetical Quantity is Referred to as the Critical Morass.**
- **It is Important to Realize When One Knows That Administratium is Present in an Organization, Much Can be More Simply Explained!!**

# Administratium

- **References**

- <http://wagoneers.com/MISC/History/Humor/administratium-author.txt>
- **Ellin Beltz wrote an article for The Journal of Irreproducible Results (1994) on 'administrontium' and 'bureacratritium' - he gives credit to DeBuvitz for the inspiration/origin: <http://ebeltz.net/resume/jir.html>**
- <http://www.lhup.edu/~dsimanek/administ.htm>

# Administratium

- You Will Know It When You See Things Get Weird!!!.
- It is All Around Us.
- Samples Can Be Provided.

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