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September 25, 1970

Dr. Philip A. Rommenfield
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Dear Dr. Rommenfield:

Thank you for your letter of September 15 with reprints of various papers. I can only agree that a balanced view of present and future dangers is necessary. However, what is dangerous and what isn't is not always easy to say, and I feel that it is better to err on the side of overconcern than to fall short.

I am not a specialist in any of the area you mention, i.e., CO₂, lead, or radiations, but I would say that of the three, I believe that both lead and radioactivity in the environment are now or are potentially extremely dangerous, and it is not to anyone's benefit to pretend, as Kehoe seems to, for example, that they are not.

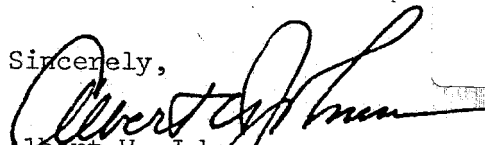
I enclose some comments made by a physiologist friend of mine on Kehoe's paper. I think you will find them interesting. This is not an attempt to "put you down," but merely to make the point that prudence and caution are advisable in the light of conflicting opinion.

From a personal point of view, I have had numerous arguments and discussions about radiation and its attendant environmental problems. The idea of proportionality, with the possible exception of extremely low levels, seems to hold up pretty well, and the argument that low levels of radiation do not produce tumors does not impress me that low levels cause no damage at all. I do agree that lying with statistics is reprehensible, but what you present of the Gofman-Tamplin-AEC controversy only scratches the surface of the problem. As one who has gone through the same kind of super-salesmanship approach of places like LRL, I know what kinds of games the AEC side is capable of playing.

Regarding your final remark on the popularity of the doomsayers, I think that the public has always been much more receptive to the dogmatic approach at either extreme on an opinion spectrum. The cautious objective scientific approach is hard to sell.

Thanks again for your letter.

Sincerely,



N 6251

on a theoretical basis. Well a measurement
clarifies the mode on an individual basis,
yet it's public health significance is enormous.

2. 2. 030 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591

This discussion of our ability to identify sources
 of lead in the environment is totally incomplete.
 The method of Patterson & Chow, based on isotope
 dilution, permits identification of the source of Pb,
 down to a specific mine. Pb isotope ratios vary
 from place to place, and with the
 Pb in parts of U.S. in (a) & (b) in
 locally produced or mine & (c) in
 (by the refineries) from mine and S.
 Also - a U.S. road survey (Schwinn) shows that
 persons in Western environments have 2x Pb in blood
 than individuals. This last sentence is not true

3. 1969 Self column, direction P -

The photograph seems indigenous to me - and the
 stuff from the press which I had data which the
 complaints about in other work. It is known that
 persons is occupied at process and symptoms,
 and is bloodless in places of .08 mg %, can
 be repeatedly seen all in the
 cause immediate Pb. action.
 blood levels - "it is within days
 blood levels are as high as ever, & new
 apparently being supplied, from 5. total deposits
 KE 02296

what is really not understood is how the skeletal burden relates to blood (& other tissue) levels in persons exposed to different amounts of Pb.

4. Pg. 697 - rt. column - top.

In view of the fact that rural persons have about 0.01 mg%, average urbanites 0.025 mg% and parking attendants & police 0.03 mg%, and presumably all eat & drink similarly, the blood levels would seem to be reflecting environmental increases. Using Patterson's data, the environmental levels have increased geometrically since Roman times. $\therefore$ Whereas we have a 0.025 mg% today - in 10 years, it could well double or more - thus coming close to 0.08 in a short period of time. As Kiese himself says, you can't abruptly alter the economy. $\therefore$ One should begin to make changes now rather than a few months before critical levels are reached in the large urban populations.

5. Pg. 698 - rt. column - top.

On the contrary, there is a great deal of evidence that Pb in slums causes mental retardation & illness in children, including high mortality!

In this paragraph, he also dismisses the effects of Pb on the non-human environment - e.g. it is "returned" to the seas. But sediments near outfalls contain several times the normal level and though their biological effects are as yet unstudied, they cannot be beneficial.

several comments:

- ① According to Patterson, the levels of Pb in analyses reported by Kehoe, at least until quite recently, were far too high because he contaminated his samples inadvertently from the environment.
∴ His statements regarding a lack of increase in body burden may be based on inaccurate data - likewise his statements about Pb in food, soil etc. In fact, for many years his data were accepted as true & resulted in the temporary establishment of an permissible Pb level in the atmosphere some 10x greater than is now considered safe.
- ② His cavalier dismissal for any role of unexposed Pb in significantly increasing the body burden seems to me inadvisable given the measured high levels in urban atmospheres and in the blood of urban inhabitants compared with rural conditions. Presumably, even without knowledge of the Pb absorbed via lungs, isotope analysis methods could identify the contribution of atmospheric lead to the body burden of the average citizen.
- ③ His discussion of Pb intake via gut takes no account of "pica" (children eating dirt etc). Although at present paint & putty in slums is the major problem, the Pb aerosol fallout in downtown S.D. (roof of library) now = 10% of total dust settling. ∴ All dirt-eating children will be exposed to high Pb intake in future. (Pb in "natural" soil is several orders of magnitude lower.)
- ④ Kehoe has always been, and apparently still is, a defender of Pb in the environment. From the above criticisms you will have gathered that I believe he overlooks several significant factors - primarily
a) The probability of sub-clinical damage, especially in children.

levels in the urban population. Another factor he ignores is interactions of Pb toxicity with other environmental pollutants. The effects of Pb, for example, on hemoglobin synthesis, both at the δ -aminolevulinic acid level and at the point of conversion of porphyrin to heme (hence the excess excretion of coproporphyrins) may have only moderate effects on O_2 -carrying capacity, producing a mild anemia. But CO & O_3 both affect hemoglobin: CO by its high affinity; O_3 by preventing dissociation of O_2 into the tissue, peripherally (the mechanism is not known, but the observations exist).

My conclusions would be:

- 1) We are approaching Pb blood levels of clinical significance quite rapidly.
- 2) The usual tests of Pb poisoning neglect subtle effects such as permanent brain damage & general "tiredness" etc. which are hard to measure, are known to exist, and are, in the national economy as a whole, tremendously important public health aspects.
- 3) The interactions with other environmental pollutants (also at "subclinical" levels) have been totally ignored but can be predicted to exist. Therefore, tolerance limits for Pb must take these into account as well.

If you need documentation for my statements,
I can provide it.

M.