Clean and Green

The State of Cleaning 38 Years After the First Earth Day

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In a recent edition of his newsletter *The Connection*, Marvin Klein, The President of PortionPac Chemical Corporation asks the question, "Do We Need Earth Day Anymore?" http://www.portionpaccorp.com/resources/the-connection/. I want to respond to that question and present my professional assessment of many issues that still need to be addressed before the cleaning and related industries can rightfully claim they are providing significant environmental protection benefits to the nation and the emerging global eco-centric economy.

Do We Need Earth Day Anymore?

No. If folks haven't gotten educated or enlightened about the importance and value of their environment by way of the past 37 Earth Days, then a 38th is a big waste of time.

Today the vast majority of people in our society, especially educated young people, know that their present and future quality of life is tied to the quality of their environment. That was not the case 38 years ago. Through environmental research and education, citizens and industries in our country have come to understand that environmental management is not an "issue" and that a clean environment is a "value." Humans show concern about the environment because it is in their health, economic, creative, and recreational interests to do so.

"Eco" is Greek for home. The environment is our home and constitutes those many interacting conditions essential for our existence. An ecosystem is literally a dynamic home system that we must keep in order, naturally functioning, and clean so we can survive.

Every element in us comes from the environment. We are fed and receive our energy through the environment. We are healed and kept healthy by the environment. We learn and created our sciences from the environment. We are actualized and fulfilled by the environment. We use the environment to recreate, apply our sciences and practice our arts. And very importantly, we use the environment as a unique form of capital in the form natural resources and energy to run our businesses and economy and to acquire wealth.

First impressions are lasting; I was there. The First Earth Day–April 22, 1970 was organized by the late Senator Gaylord Nelson of Wisconsin to gain the attention of the media and his colleagues of the need to pass laws that managed the environment so as to protect human health and natural environmental processes in the face of an ever-growing national population and industrial economy. Earth Day 1970 was indeed a spectacular media event. An estimated 20 million people nationwide attended festivities that day.

Personally, I did not attend the festivities held at Oregon State University where for the previous 12 months, after returning home from Viet Nam, I had been busily studying mathematical statistics and environmental engineering. I vividly recall walking through an otherwise beautiful, well maintained, Pacific Northwest campus seeing hundreds of scruffy looking students sitting around under green banners and ragged signs, singing songs, reciting poems to mother-earth,

strumming on musical instruments, smoking pot, and some idiots even partaking of LSD.

Most of the students in the First Earth Day event could have cared less about the environment, they were protesting the Viet Nam War.

The next day when I walked backed through the campus on my way to class, I saw one of the most disgusting polluted environments on planet earth—the lawn was destroyed, cigarette butts and trash of all types scattered over the place. I got a good whiff of urine vapor as I walked by the bushes. Quite frankly, I had seen cleaner battlefields than that.

In 1975, a friend at EPA was invited to give the keynote address at the 5-year Earth Day celebration down the road at Elon College. He was told several hundred students, faculty, local citizens would attend. He spent 3 weeks putting together a great science based presentation. When he got to the auditorium that held 1000, 5 very shy students showed up. I recall they spent an hour just chatting.

My point is this, Earth Day celebrations and all the green banners, labels, and verbiage in the world will not protect the environment. Hoopla has to be replaced with educated managers and technicians skilled at intelligently preventing or removing unwanted matter from the environment before it can cause adverse effects. Well-trained cleaning professionals do that.

Some good things did come out of the First Earth Day. For starters, college students learned to spell "pollution" with two "l"s. President Nixon signed the Clean Air Act and the Clean Water Act into law not because he cared about the environment but only because he firmly believed the Supreme Court would never uphold those laws—obviously, he was wrong. Today we have some of the cleanest air and water quality in the industrialized world.

Perhaps the best thing to come out of these first federal environmental laws was funding for public health and environmental science research, and education. That is why I joined EPA in 1971. It was the only organization in the world at that time that had money for environmental science research. The Cleaning Industry also benefited, I used some of that funding to initiate cleaning science research in 1988. It is too bad so few people have paid any attention to those peer reviewed and published research results that clearly demonstrate that a properly designed cleaning program will produce a healthy environmental condition.

Out of the first Earth Day came a political-social movement we today call "environmentalism." In Europe, it is called the Green Party.

The suffix "-ism" indicates a distinctive system of "beliefs" that guides a social movement, often untaken by an elitist class of people. "Environmentalism" is a movement that takes advantage of topophilia (love of environment) tendencies all humans possess. Unfortunately, environmentalism takes on cult like, group think characteristics. Environmentalism beliefs about the environment are often not based or rational facts or reality as found in science; they are often based on irrational feelings, emotions, and political correctness. Science is sometimes completely ignored or misrepresented by environmentalists in order to achieve their objectives.

As a science trained manager and health professional, the big problem that I have with "environmentalism" is that it is mostly based on political science rather than on science. Frequently, those who do not adhere to the beliefs of environmentalism are put on guilt-trips, berated, disenfranchised, and presented as being stupid, irresponsible or uncaring. If you ask me, I think this is pretty totalitarian and not acceptable in our free society where citizen consumers have the right to take a hard look at and question the facts behind environmental policies and marketing claims.

I am not and have never been an environmentalist. Increasingly I find myself openly challenging and criticizing "environmentalism." I am a well schooled and informed, highly experienced, scientist and educator. Primarily, I am a health professional with a serious purpose to protect and sustain a

healthy environment that provides an elevated quality of life for fellow citizens and me. I refuse to compromise my intellectual and professional integrity simply because it's a political or stylish market trend.

My challenges to environmentalists will continue to be: "Show me your data." "Demonstrate to me by way of scientific methods, measurement, and data how your beliefs and preaching protect the environment and contribute to the betterment of human life on the planet."

Science is a proven body of knowledge that answers the question, "How does the world around us work?" Regardless what environmentalists, especially politicians, "believe" to be an "inconvenient truth," without science and factual information, we cannot identify and manage the essential conditions for life and health.

Far too much of what we hear about environment today in the media, including the cleaning industry media, is "green babble."

"Green" is a code word for environmental protection and sustainability. "Green" is a symbol of value, respect and concern for the life sustaining processes and cycles of the natural environment system of which we are all a part, which determine our health and quality of life, and which we humans can adversely affect and alter by our human activities if we are not careful. The concept of "green" has traditionally centered on pollution prevention, waste minimization, recycling so as to prevent unwanted matter (wastes, pollutants) from causing harm to the natural system. I view "green" as a useful symbol.

"Babble" is nothing more than undisciplined, fact-less conversation. It has no basis in science. It is not only useless, it is often deliberately misleading. Much of the verbiage related to green products and services in general is baseless political correctness or marketing hype, and completely irrelevant to the protection of our health, let alone to natural environmental processes derived through an effective cleaning process. That is why I view "green babble" as superficial and misleading often to point of being idiotic.

The State of Cleaning and Related Industries 38 Years After the First Earth Day

We cannot sustain the quality of life benefits derived from the environment unless we manage our environments, indoors and outdoors. Cleaning is a fundamental environmental management process of putting pollution in its proper place especially in built environments where we spend the vast portion of our life and are the environments to which we are exposed the most and the environments that affect our health to the greatest extent. That is why cleaning is so important.

Environmental management is not an "ism" like "environmentalism." It is not a political philosophy. Environmental management in the form of effective cleaning is a science based, purposefully structured and well-understood, "professional" activity. It has been around for as long as humans have settled in built environments. Every professional endeavor is based on a well-defined body of knowledge, extensive training, skill, and experience. Professional cleaners are actually environmental managers.

As an environmental science and management educator, I have over many years, time and again stated, "effective cleaning is the most fundamental environmental activity we employ to create healthy conditions in the environments where people in modern society spend the vast majority of their lives." These millions of built and indoor environments are sub-compartments of the natural environment that also needs our constant attention. But from a human health protection point of view, our primary concern is for our most immediate built indoor environment where people are at greatest risk.

One of the very first public health education statements I made over 25 years ago was, "There is no organized body of factual information that constitutes a science of cleaning." That statement is valid today. After

observing and studying the cleaning and related industries as they relate to meaningful environmental protection, I am concerned and disappointed in what I find currently. Until these many issues and conditions are addressed and resolved so as to create a factual body of knowledge, the cleaning and related industries can never rightfully claim that they are serious about effectively working to protect the health and well-being of the public and customers they serve.

1. There is no widely recognized definition of "clean" and "cleaning." For the most part, clean and cleaning are thought to be "subjective." Appearance remains the hallmark of the clean condition.
2. Cleaning is not viewed as fundamental environmental management process.
3. The value and benefits (economic utility) of cleaning are not recognized or taught by the cleaning industry or understood by the general public.
4. "Cleaning for health" is an overly broad marketing slogan used throughout the industry and marketplace. However, there is little indication that the industry knows or recognizes in what ways effective cleaning relates to, affects, or protects health.
5. There is no hierarchy of risk management or risk reduction benefit associated with cleaning.
6. Effective cleaning is not widely recognized as a form of insurance or that ineffective cleaning has a high cost in the long term.
7. "Effective cleaning" is not defined or understood as an environmental science-based process.
8. Cleaning performance is not measured, especially in terms of environmental quality.
9. High performance, science-based, quality management cleaning programs are extremely rare throughout the building services contracting industry.
10. Speed, convenience and low cost are industry priorities rather than effective cleaning. The typical performance measure of cleaning systems is money saved and not environmental quality provided. For the most part cleaning is measured in terms of low bid, money expended, and labor required.
11. Building-related health complaints remain substantially high. Health effects associated with indoor environmental exposure continue to grow–such as asthma, allergies or dermal effects. Infectious disease rates, which are often fatal, are increasing at an alarming rate in the absence of effective cleaning.
12. Housekeeping-related diseases and injuries are very high across the industry. The cleaning industry has a very high occupational injury rate.
13. There is no organized body of information that constitutes "cleaning science." Consequently, there is an absence of "professionalism" in the cleaning industry.
14. The absence of effective cleaning and professionalism is adversely affecting institutions and industries that require cleanliness—especially in hospitals, other healthcare facilities, day care facilities, and schools.
15. Because of the absence of cleaning science, government agencies do not recognize, seek out or listen to "professional cleaners." Government policy makers can do, say, and dictate anything they please without fear of contradiction.
16. There is limited testing or efficacy with regard to cleaning technologies or processes, particularly in regard to cleaning effectiveness.
17. There is no standardized protocol by which to measure cleaning effectiveness or validate claims with regard to cleaning technologies. Many clams made with regard to the effectiveness of cleaning technologies and processes are

baseless and in many cases deliberately misleading.

18. Ineffective cleaning produces significant levels of pollution that cause environmental degradation.
19. The "green movement" is often an example of political correctness rather than a matter of science and effective cleaning. The "green cleaning" movement, however well intended, has created a high level of confusion with unsubstantiated claims throughout the cleaning industry.
20. "Green cleaning" is undefined. There is no widely accepted definition of "green cleaning." There is no recognition that clean is green.
21. The "green cleaning" movement focuses primarily on chemical product replacement and does not address cleaning effectiveness.
22. There is no demonstration that “green chemicals” clean—that is, reduce risks.
23. There are no risk/benefit assessments for cleaning chemicals in general and no recognition of tradeoffs.
24. Green certification is increasingly used as a form of backdoor regulation but without administrative process or "a hard look" in the form of criteria and science.
25. A most disturbing fact: infectious disease trends that can be at least in part controlled by effective cleaning have steadily increased in the past decade. This occurs in some instances where so-called green products have replaced traditional cleaning products. Examples are hospitals, schools and government buildings.

The Green Cleaning Movement

The origins of the current Green Cleaning Movement, at least as related the cleaning chemical market and sales, can be traced to an executive order signed by President Clinton, September 14, 1998. The title of the Executive Order 13101 originated in the Office of Vice-President Al Gore: "Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition."

The executive order says nothing at all about cleaning or its environmental protection attributes.

The main intention of the order is to encourage pollution prevention, waste minimization, recycling, and reuse throughout the massive federal government purchasing power.

Green cleaning products can logically be assumed to be candidates for government procurement if it can be demonstrated they are effective in the purpose for which they are purchased. It is evident that the order intends that in the interest of governmental "efficiency" and "effectiveness", the "green", environmentally preferable product replacing an existing product be both effective at its intended use, and have a lesser environmental impact. In other words, the new product needs to be as effective as the product being replaced before its green attributes are considered. This is not occurring.

Government fiat such as the executive order described above does not insure "environmentally protective cleaning." However, government actions, decisions, and policies with regards to cleaning products, do indeed set the stage and influence consumer perception and marketplace trends. When the federal government and large states like California and New York institute environmental programs, other state and local governments follow. This has a tremendous influence on what is bought and sold in the marketplace.

Given the eco-centric world in which we live, politicians and government agencies want to look and be "green." And they should because government at all levels collectively makeup the most wasteful and biggest polluting entity in the nation. It is the primary duty of government to protect citizens, and a clean healthy environment is an essential part of that protection.

Politicians and government administrators at every level tend not to value

and demonstrated scientific based knowledge about the benefits and value of effective cleaning. This is very evident in the government facilities throughout the nation, which are the largest group of health complaint buildings in our society. For the most part, government buildings and facilities are not effectively cleaned. This is a particularly serious condition in public schools and government hospitals and health care facilities.

Green cleaning certification is increasingly used as a form of backdoor regulation. Government agencies abdicate through procurement their responsibility to have knowledge of effective cleaning; they pass certification off to non-governmental entities that are not held legally or politically accountable for their decisions. In growing numbers, government agencies mandate the purchase and use of certain cleaning products without administrative process, full disclosure of who actually benefits, or "a hard look" at cleaning effectiveness in the form of criteria and science. There is no science based, peer reviewed demonstration that “green cleaning chemicals” clean; that is, reduce environmental risks. There are no risk-benefit assessments for green cleaning and no recognition of tradeoffs.

Make no mistake about it, green cleaning today is less about cleaning and environmental protection, and mostly about chemical sales. The green cleaning movement as currently structured, focuses on chemical product replacement and does not address cleaning effectiveness.

Infectious disease trends that can be at least in part controlled by effective cleaning have steadily increased in the age of the green cleaning movement. This begs the question, are we cleaning for health less effectively when we use "green cleaning" products?

Science and Management Concepts that Make Cleaning Effective as a Health Essential Environmental Management Process

I claim original authorship of the widely used phase "Cleaning For Health." It is the subtitle of a book I published in 1994. So I feel fully qualified to tell you what "Cleaning for Health" means.

Health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” This definition comes the second page of the World Health Organization Charter.

The primary reason and benefit of cleaning is to created a physical and mental condition of well-being for humans. Cleaning reduces adverse exposure levels and risks by removing unwanted substances from the environment thereby reducing or eliminating exposures and adverse effects. Hygiene is commonly understood as preventing disease and infection through cleaning. Good hygiene includes the absence of soil, and harmful levels of bacteria and other microorganisms and harmful matter. Good hygiene as indicated by a state of cleanliness, enhances health, as well as aesthetics, comfort, social interactions, and human productivity. In many instances, the process of effective and high performance cleaning directly aids in disease prevention and isolation. Thus, in the midst of an epidemic, good personal hygiene and effective cleaning processes reduces contagion.

Civilized humans have always cleaned so as to protect health–prevent disease and enhance social well-being. If you do not believe me, look at the Book of Leviticus, currently read by billions of members of three major religions of the world and written about 3000 years ago. It reads like a modern public health manual.

By reducing human exposure to unwanted matter, cleaning reduces environmental risks and enables sanitation;

cleaning prevents illness by breaking the transmission chain of infectious agents.

Cleaning enables mental and social-well being in several ways. Cleaning provides living space and protects valuable materials. Cleaning creates an inviting condition. It promotes ownership and human dignity; maintains the value of real estate; accents aesthetics and encourages topophilia—love of place. Cleaning sends a caring message; projects a professional image and promotes business success; enhances human productivity; and prevents crisis and financial loss.

As one can see, environmentally protective cleaning is much more than a focus on chemicals.

At one early point in time, "Green Cleaning" had the potential to be a very useful concept for protecting the environment. Cleaning, while at the same time protecting the built and natural environment, is essential for sustained human existence on planet Earth, especially in the face of an ever expanding, highly mobile, global population. However, high performance cleaning programs designed to protect human health were never established as the primary focus of the movement. Unfortunately, today the cleaning component of "the green cleaning movement" is hardly ever talked about and properly understood as an important environmental protection process. In large part, political correctness, public perceptions and incomplete or questionable data about chemical toxicity, and misleading green marketing, rather than science and effective cleaning is determining the direction of green cleaning.

Let me define some terms and concepts and describe cleaning processes that when properly understood and effectively implemented produce healthy environmental quality.

1. Environment is the sum of all external conditions affecting the life of an organism. A human is an organism. Freedom from pollution exposure is a life essential condition for that organism.

2. Clean is an environmental condition free of unwanted matter. Unwanted matter is often pollution that gets in the way of human endeavors, pose a risk or cause an undesirable or adverse effect. It goes by many other names to include wastes, soils, dirt, dusts, trash, and pathogenic microorganisms.

3. Cleaning is the systematic science based management process used to achieve the clean condition—putting the unwanted matter in its proper place. The process requires scientific insight for:

- Specifying and understanding the nature and characteristics of the environment or sub-compartment to be made free of unwanted matter (i.e., pollution, soils, etc.);
- Locating, identifying, and understanding the physical, chemical, or biological characteristics of the unwanted matter to be removed;
- Separating and containing the matter so as it can be removed from the environment or sub-compartment;
- Transporting and/or removing the unwanted substance from the environment (place to be made clean); and
- Properly disposing or repositioning the matter so as to not degrade or cause harm to other environments or the natural environmental system.

4. Effective environmentally protective cleaning is characterized by the following criteria.

- Maximized measurable removal of pollutants from the environment and/or sub-compartment;
- Minimize cleaning derived chemical, particle, and moisture residue;
- Clean for health first and appearance second;
- Recognize connectedness and clean to improve the measurable quality of the total environmental system;
- Provide for safety;

- Practice pollution prevention and waste minimization;
- Properly dispose of cleaning wastes.

Effective cleaning is designed to be optimally protective of the environment. One cannot do any better than removing unwanted matter to the greatest extent thus ensuring acceptable risk for humans, valuable materials, and the natural environment from exposure to the unwanted matter.

5. High performance cleaning is a science based management process. The effectiveness of any cleaning system resides in the comprehensive, coordinated, scheduled, systematic cleaning coverage of the building and its connected compartments; the quantity of unwanted matter removed from the presence of humans and valuable materials; the use of cleaning equipment and technology tested and evaluated for effectiveness and safety; the professional training of the cleaning staff at both the management and operational level. A high performance cleaning process or program is one that achieves an effective cleaning result on a consistent or sustained basis through the application of quality based management principles and proven management competencies to include:

- Understanding the essence of management and the essentiality of leadership;
- Professionalism and respect for the professional cleaner;
- Clear cleaning objectives and constancy of purpose;
- Intense focus on customer and institutional needs;
- Well-defined cleaning process and management structure;
- Comprehensive training program;
- Cleaning effectiveness measurements;
- Effective communication;
- Tested cleaning tools and technologies;
- System simplicity.

A Recommendation

What might the cleaning and related industries do with regard to “green”?

Overall, the cleaning and related industries should support the concept environmental protection and management cleaning through high performance cleaning systems that produce a measurable effective cleaning result.

The industry should be hostile to incomplete science and "green-wash"–these pose a real danger to public health.

The industry should know the environmental attributes of products and cleaning services through peer reviewed science and testing.

Manufacturers should sell cleaning science and environmental protection knowledge along with product. They should support testing and training and emphasize the effective and efficient use of cleaning products. They should use science-based knowledge to make products and cleaning system efficient and effective at cleaning and protective of the environment.

Service providers should use science to develop cleaning professionalism. Without knowledge of how the cleaning process works, one cannot be effective at cleaning.

Service providers should use knowledge to educated, inform, and get closer to customers through effective-environmentally cleaning.

All in the cleaning and related industries, should use cleaning science to gain a competitive advantage in the green age by way sound science and factual representation..

Green labeling and certification of cleaning chemical should not automatically be discouraged, but it should be based on serious, solid, science assessment.

Green certification of cleaning products should not be used as form of backdoor product regulation without accountability.

All cleaning products should be shown to be useful in the process of effective cleaning as part of certification. This is currently not happening.

The potential consequences of green cleaning standards to public health protection are enormous. Whatever standard and product recommendation and selection that comes out of the certification process should be based on a highly visible and comprehensive risk benefit analysis. If public health is to be protected, there must be a full consideration of tradeoffs and a clear, understandable, peer-reviewed, basis in science for the standards. Political correctness, superficial, and incomplete science is dangerous to public health.

The cleaning industry should get fully involved in the certification process, should one be found desirable and create a unified demand for full disclosure and sound science.

I want to compliment my friend Marvin Klein, the President of Portion Pac Chemical Corporation whose business performance I have followed and admired over the past 20 years. Marvin is one of the most socially responsible business executives and proven leaders and advocates for environmental sustainability I have even had the pleasure to meet. I have always been impressed with the environmental protection attributes of his products. Two decades ago, I saw the environmental health benefits of packaging cleaning chemicals so as to be safely used by workers and at the same time preventing larges amounts of chemical residue from entering the environment. Marvin has consistently shown insightful, caring concern and respect for this customers and the environment. Thank you very much Marvin.

About the Author: Dr. Michael A. Berry served as any Army officer in Viet Nam in the 1960s. After returning to civilian life he earned a Doctorate in Public Health and worked in the US Environmental Protection Agency where as a senior manager and scientist he served as the Deputy Director of National Center for Environmental Assessment at Research Triangle Park, NC. During his 28-year career with EPA, he had extensive interactions with environmental organizations, local governments, the federal courts, US Congress, universities worldwide, and institutions such as the National Academy of Sciences, the World Health Organization, and the North Atlantic Treaty Organization. For over 20 years, Dr Berry taught public health, environmental science, and business and environment courses at the University of North Carolina. He is currently a writer and part-time consultant specializing in the evaluation of environmental quality and human health effects, environmental management strategies and policy.

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