

Now is the Time
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Abstract

At US \$2.2 trillion, the annual cost of corrosion worldwide is over 3% of the world's GDP. Yet, governments and industries pay little attention to corrosion except in high-risk areas like aircraft and pipelines. Now is the time for corrosion professionals to join together to educate industry, governments, and the public. Now is the time to work together to harmonize standards and practices around the world and to communicate and share corrosion mitigation technologies. Now is the time to make a major impact to protect the environment, preserve resources, and protect our fellow human beings.

Introduction

Now is the time we corrosion professionals need to join together and act. We need to come out of our laboratories and away from our pipelines, power plants, and infrastructure to take a good look at where we are, where our industry is going, and how we are getting there. We are not, in general, getting the attention of industry and government leaders except in areas where there are significantly elevated risks – like pipelines.

Let's face it. Watching corrosion occur is like watching grass grow, but in slow motion. It is difficult if not impossible to get the attention of corporate executives for phenomena that take years to cause problems when they have to satisfy the investment community every quarter and, may I add, protect their own compensation every year.

Discussion

What we are doing now is costing our economies dearly. The latest surveys show that the worldwide direct cost of corrosion is between €1.3 and 1.4 trillion, or 3.1 to 3.5% of a nation's GDP annually. These figures reflect only the direct cost of corrosion – essentially materials, equipment, and services involved with repair, maintenance, and replacement. It does not include the environmental damage, waste of resources, loss of production, or personal injury resulting from corrosion. At the same time, corrosion experts have concluded that a net of 20 to 25% of that annual cost can be saved by applying currently available corrosion control technologies. What could the world's economies do with annual savings of €325 to 360 billion?

The public hears about bridges and piers that collapse due to corrosion and environmental damage caused by pipeline failures, but does it ever hear about the loss of potable water from water main corrosion or environmental damage caused by corroded sewer lines? The answer is no. Neither news media nor government agencies find such events sufficiently newsworthy to alert the public. Yet in many countries, the cost of water and wastewater system failures is far greater than any other single sector of the economy.

Corrosion knows no national boundaries. Acid rain generated in one country pollutes the environment and causes corrosion damage far beyond that country's borders and even beyond the borders of its neighbors. Toxic materials, released from corroded equipment in one area, pollute the air and water far beyond one country's borders. And toxic material released into the world's waterways poisons sea life, killing many species and making others toxic to humans.

Now is the time that we, the corrosion professionals, need to work together to conserve our resources and protect our planet. We cannot do an adequate job working alone. We must communicate with our neighbors and with corrosion professionals around the world. The problems we face in one area may have already been solved by corrosion professionals elsewhere in the world. Whether a corrosion problem exists in a country the size of Israel or in one the size of the USA or Russia, neither the local corrosion professional nor the corrosion society to which he or she belongs has answers to all of the corrosion issues in that area. Now is the time for corrosion professionals to communicate and work together.

One of the major issues facing industry today is conflicting corrosion-related standards. NACE has long worked with the Australasian Corrosion Association to make sure that there are no conflicts between standards in North America and Australia–New Zealand. In the past few years, NACE and EFC have been working together to ensure that certain NACE and ISO standards are in agreement, such as NACE MR0175 and ISO 15156. Yet there are many conflicting standards in Europe, between Europe and North America, between Japan and other countries, etc. This makes it difficult for companies operating in multiple countries to adopt a uniform set of standards throughout their organization. However, let us not confuse *standards* with *regulations*. Regulations are adopted by government agencies and generally follow one or more standards provided by organizations that write consensus standards, but incorporate modifications that are specific to that country or region. That would be fine if the standards themselves were not in conflict. Thus, it is time for us to work together to harmonize corrosion-related standards.

Industries and governments turn to the people they believe have expertise in a field to help solve problems. When it comes to corrosion problems, how do industries and government agencies determine which prospective contractors are quali-

fied to provide the products and services they need? How do they evaluate the technical aspects of proposals for corrosion mitigation?

Today, there are many organizations providing education programs in the field of corrosion and corrosion mitigation, but there is no consistency among those programs. Many are purely theoretical. Others focus on practical applications to the point of being a cookbook approach to handle each situation, but failing to give the student sufficient understanding to safely handle corrosion problems that require different approaches. The best programs combine classroom theory with hands-on field training.

So what do industries and government agencies look for? They look for contractors whose qualifications have been certified by independent bodies. But there are no agreed-upon uniform standards for qualifying contractors or materials in our field. That's a real problem for companies operating in multiple countries and for industries and government agencies in one country to evaluate the qualifications of contractors educated and qualified in other countries. Now is the time we corrosion professionals need to work together.

Three years ago, this became the focus of leaders of several organizations focused on corrosion and corrosion control. We came together to develop a plan for cooperation. That plan developed into a new, umbrella organization, the World Corrosion Organization (WCO). Founded by the Australasian Corrosion Association, the Chinese Society for Corrosion and Protection, the European Federation of Corrosion, and NACE International, the WCO held its inaugural meeting in March of this year. A number of national and regional not-for-profit organizations with direct interest in corrosion have joined the WCO.

The mission of the WCO is: *to promote education and best practices in corrosion control for the socio-economic benefit of society, preservation of resources, and protection of the environment.*

The WCO has four goals, which I will present in no specific order:

- To identify world best practices in corrosion management: There are two thoughts here. First, we need to identify what the best practices are; that is, those practices that should always be used by the industrialized world. However, in many parts of the world, countries lack the resources to put in place what the industrialized world agrees are best practices. Therefore, we need to look at the developing world almost on a region-by-region basis to determine best practices most suitable for their socio-economic conditions.
- To facilitate the provision of corrosion control expertise to governments, industries, and communities: Here we are seeking a way to make the names of corrosion experts available worldwide. We perceive this goal as being one that we will undertake along with the International Corrosion Council.
- To raise public awareness of corrosion and corrosion control: One of our strategies here is to develop a Corrosion Awareness Day that is recognized worldwide in the way we recognize Earth Day. We believe that only through a worldwide Corrosion Awareness Day can we effectively create public awareness of corrosion and what the public – individuals – can do to control it. There are simple things we can all do; for example, periodically replace the sacrificial anodes in our hot water heaters so that we don't have to replace the hot water heater itself. For those of us who live in colder climates, where we have snow and ice and where the highway departments use salt to keep the roads passable, a campaign is needed to convince people to purchase vehicles with proper undercoating and clean the undercarriage whenever they wash their cars.
- To normalize corrosion-related standards worldwide: I have already discussed the problem. Now it is time to work together to harmonize the standards that are already in use.

Now is the time for this to happen. Why? Because we now have the tools and resources to be able to work together efficiently and effectively. The work of the WCO will be carried out by joint committees staffed with individuals representing member organizations around the world. The joint committees hold virtual meetings, making use of the latest Internet technologies rather than committee members flying long distances to hold face-to-face meetings.

Conclusion

We are at a unique point, when the tools and resources are all in place to match our needs and help us meet our goals. Now is the time to make government agencies, industry, and the public aware of the high cost of corrosion – to our environment, our resources, and humankind.

Now is the time to get involved with your peers. Now is the time to work together to protect our planet, preserve our resources, and protect our fellow human beings. This is not a political matter. It is, like global warming, a matter of survival – corrosion has a profound effect on the quality of life of our children and grandchildren and the inhabitability of our planet.

The time is now. Please join us.