A Career in Corrosion Control

Drew Hevle
Manager, Corrosion Control, Kinder Morgan

NACE Houston Section
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Inspector Protector and the Colossal Corrosion Fighters
WHAT IS CORROSION?
What Is Corrosion?

 REFINING PROCESS = Adds energy

 CORROSION PROCESS = Returns to lowest-energy state
Potential Energy, Thermodynamics, and Timmy
Sisyphus (Greek mythology)

- King of the city of Corinth
- Punished for deceitfulness and for believing he was more clever than Zeus himself
- He was doomed to roll an immense boulder up a hill, only to watch it roll back down, and to repeat this action forever
A Career in Corrosion Control

WHY IS CORROSION CONTROL IMPORTANT?
$276 Billion
The United States Cost of Corrosion Study

ANACE INTERNATIONAL
THE CORROSION SOCIETY
A Career in Corrosion Control

WHY ELSE IS CORROSION CONTROL IMPORTANT?
Guadalajara Sewer Explosions
Mianus River Bridge
Aloha Airlines Flight 243
Maltese Tanker MV Erika
Prudhoe Bay – Alaska North Slope
Subaru Recalls 660,000 Vehicles for Brake Line Corrosion

Hyundai Recalls 239,000 Cars for Corrosion Problem

Toyota Recalling More Than 1 Million Vehicles Due to Rear Suspension Arm Corrosion

Ford recalls 435,000 vehicles Because of Subframe Corrosion Issue
A Career in Corrosion Control

WHAT DOES A CAREER IN CORROSION CONTROL LOOK LIKE?
Typical Corrosion Engineer

I have skills

numchuck skills, bowhunting skills, computer hacking skills...
Careers in Corrosion Control

Pros
• All the free pens & baseball hats you could ever want
• You are not expected to spend a lot of money on your wardrobe
• Your goals are to fight the good fight, protecting people, property and the environment
• These goals are for the good in the long run

Cons
• Doomed to a life of futility and hard labor
• Your colleagues are not going to win any best-dressed awards either
• The Laws of Thermodynamics always win
• In the long run, we’re all dead
Different Roles in Corrosion

- Academic
- Aerospace
- Anodic/Cathodic Protection
- Chemical Processing
- Coatings and Linings
- Engineering/Architecture Consulting Firm
- Government
- Instrumentation
- Metals and Mining
- Natural Gas Utility
- Oil & Gas Extraction
- Oil & Gas Pipeline/Storage Tanks
- Original Equipment Manufacturer
- Plastics/Nonmetals
- Power Plant/Electrical Utility
- Pulp & Paper
- Refining
- Research & Development
- Ships/Marine/Offshore Platforms
- Testing Services
- Transportation
- Water Distribution/Treatment
NACE International Membership

~35,000 members in
• >110 countries
• 8 Areas
• 131 Sections

46% Membership outside USA

<table>
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<tr>
<th>Year</th>
<th>Total Membership</th>
<th>Total Membership Beyond US &amp; Canada</th>
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<tr>
<td>1946</td>
<td>801</td>
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<td>1986</td>
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<td>2011</td>
<td>25,723</td>
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<td>2012</td>
<td>28,446</td>
<td>11%</td>
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<td>2013</td>
<td>33,244</td>
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<td>2014</td>
<td>35,000+</td>
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Jan 28, 2014 (33,479)
USA: 18,187
Canada: 3,343
China: 1,356
India: 1,023
Australia: 952
UK: 916
Saudi Arabia: 483
UAE: 458
Career Progressions in Corrosion

• Technical
  – Typically single-contributor
  – Continue to develop technical skills and experience throughout career
  – Degrees, certifications, licenses and other credentials may be important

• Business
  – Manage people and/or projects
  – Importance of technical skills decreases throughout career
  – Credentials related to corrosion are often not required
  – Other roles of NACE become more important, such as networking, marketing, sales, recruiting, etc.
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WHY CONSIDER A CAREER IN CORROSION CONTROL?
US Average Annual Corrosion Salaries

Inflation-Adjusted Average US Salary
Salary by Years of Experience

Average Annual Salary

Years of Corrosion Experience

<2 Years  2-4 Years  5-9 Years  10-19 Years  20-29 Years  30+ Years

$20,000  $40,000  $60,000  $80,000  $100,000  $120,000  $140,000
Salary by Education Level

- High School
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Doctorate Degree
- Post-Doctorate
DON'T BE A FOOL
STAY IN SCHOOL
Corrosion Education

- Two-year college programs
  - Kilgore College
  - Houston Community College
  - Lone Star College
- Corrosion Engineering degree program
  - University of Akron
- Training & Certifications
  - NACE International and NACE Institute
Corrosion Education

Arizona State University
Boise State University
California Polytechnic State University
California State University Northridge
Case Western Reserve University
Clarkson University
Colorado School of Mines
Cornell University
Florida Atlantic University
Florida Institute of Technology
Florida International University
Georgia Institute of Technology
Institute of Paper Science & Technology
Iowa State University
Johns Hopkins University
Kilgore College
Louisiana State University
Massachusetts Institute of Technology
Michigan Technological University
Missouri University of Science and Technology
Montana State University
New Mexico Tech
North Dakota State University
Northeastern University
Northern New Mexico College
Ohio State University
Ohio University
Oklahoma State University
Old Dominion University
Oregon Graduate Institute of Science and Technology
Rensselaer Polytechnic Institute
Texas A&M University
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