



Reducing Legacy Chemical Inventory at Sandia National Laboratories (SNL)

March 19, 2014

**Mark Brynildson, Chemical Management
SNL/CA**

*Exceptional
service
in the
national
interest*



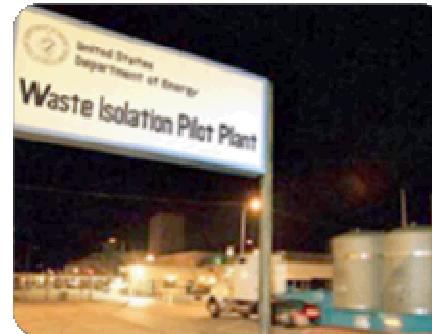
Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Sandia's Sites

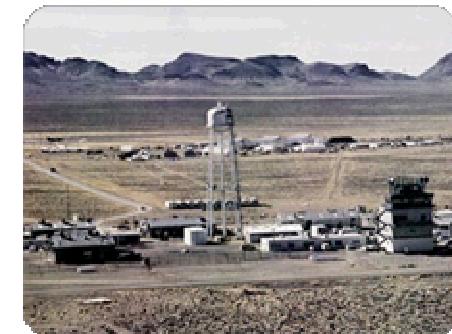
Albuquerque, New Mexico



Carlsbad, New Mexico



Tonopah, Nevada



Livermore, California



Amarillo, Texas



Kauai, Hawaii



Chemical Inventory History at SNL

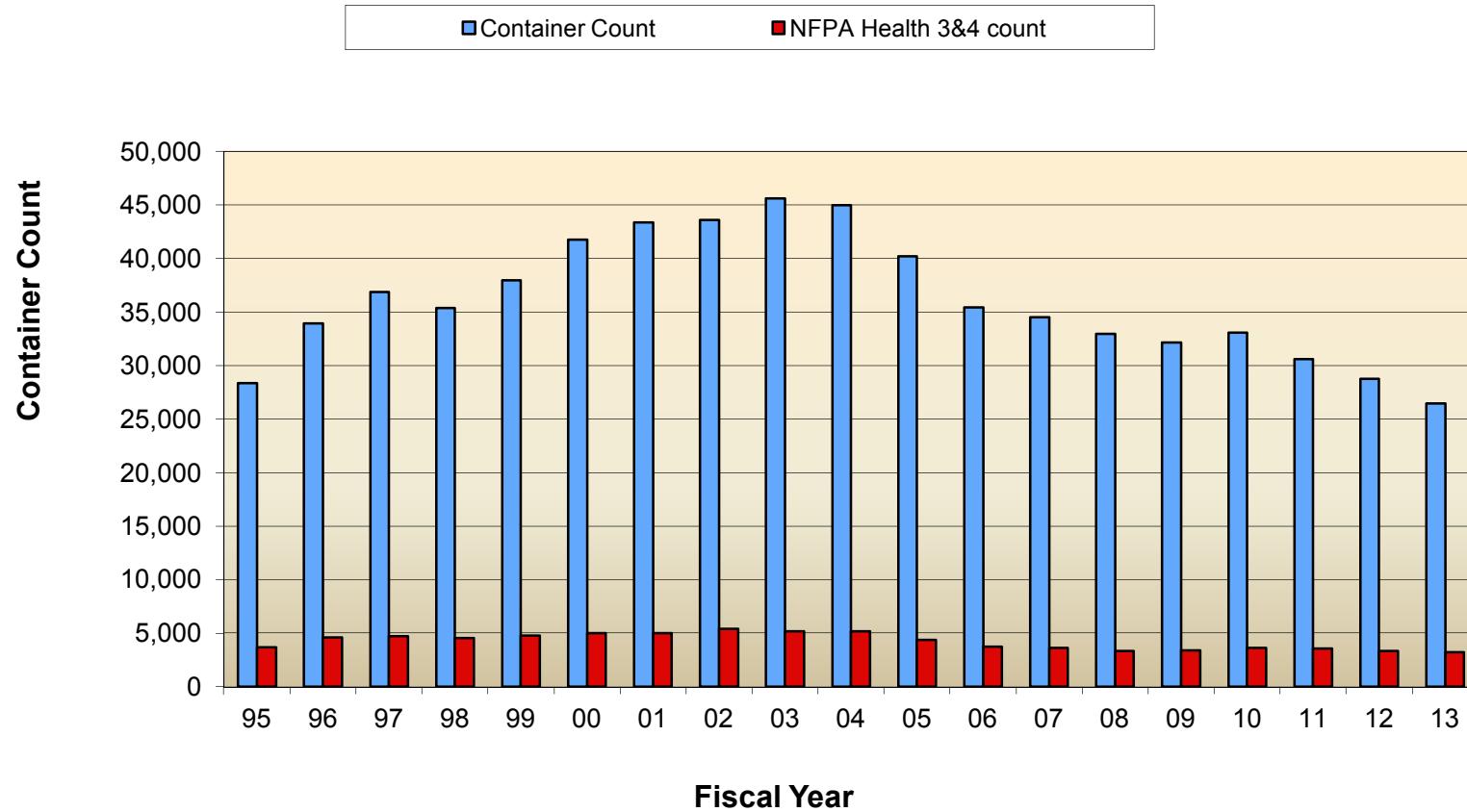
- Modern Chemical Management at SNL
 - SNL/CA (Livermore, CA – 1992 ~30,000 containers)
 - SNL/NM (Albuquerque, NM – 1996 ~115,000 containers)
 - SNL/NV (Tonopah, NV – 1999 ~3,200 containers)
 - SNL/CB (Carlsbad, NM – 2000 ~600 containers)
 - SNL/HI (Waimea, (Kauai) HI – 2012 ~700 containers)
- Barcoded Container Tracking System
 - ~100,000 active MSDSs & SDSs available (many more archived)
 - >145,000 chemical containers
 - ~2,000 SNL chemical storage locations

Legacy Chemical Reduction - Overview

- SNL/CA Legacy Chemical Reduction Motivations
 - Emergency Management (DOE O 151.1C November, 2005) driven chemical reduction
 - Excess gas cylinder reduction – Matheson Gas
 - Higher risk chemical reduction
 - International fire code driven chemical reduction
 - EMS - Environmental risk driven chemical reduction (EMS Objectives/Targets set)
 - General housekeeping driven chemical reduction
 - Reduce personnel exposure
 - Reduce environmental fugitive emissions
 - Reduce long term financial liability
 - Reduce chemical storage footprint
 - Develop and test inventory process control model for other SNL sites and DOE
 - Reduce Chemical Management operation costs and regulatory risk
 - Support Waste Management Service Center recoveries
- SNL Legacy Chemical Reduction Motivations
 - SNL Performance Evaluation Plan (PEP)
 - EMS - Higher risk chemical reduction

Chemical Inventory Profile

SNL/CA Chemical Inventory Container Count



Legacy Chemical Reduction - Age Process Controls

Excess Chemical Management

Excess Chemical Management Process



Contact: [Mark Brynildson](#) 294-3150 and [Susie Ayers](#) 294-4648

Guidance Information

On 4/5/2011, SSHEAC approved new SNL/CA site FY12 Environmental Management System (EMS) targets designed to reduce the site inventory of old and expired chemicals. "Expired Chemicals" will be expected to be eliminated entirely. Chemicals between 10–15 years old will be reduced to no greater than 15% of the chemical inventory and chemicals older than 15 years no greater than 10% of the chemical inventory. Centers will be required to report their status annually to SSHEAC on their Center Annual Report.

Support your Center and reduce your excess chemical inventory by disposing of old and expired chemicals from your work areas and chemical storage spaces to meet the targets. Since this is an on-going excess chemical management process, continue to monitor and dispose of excess chemicals on a routine basis to stay in compliance with the annual targets.

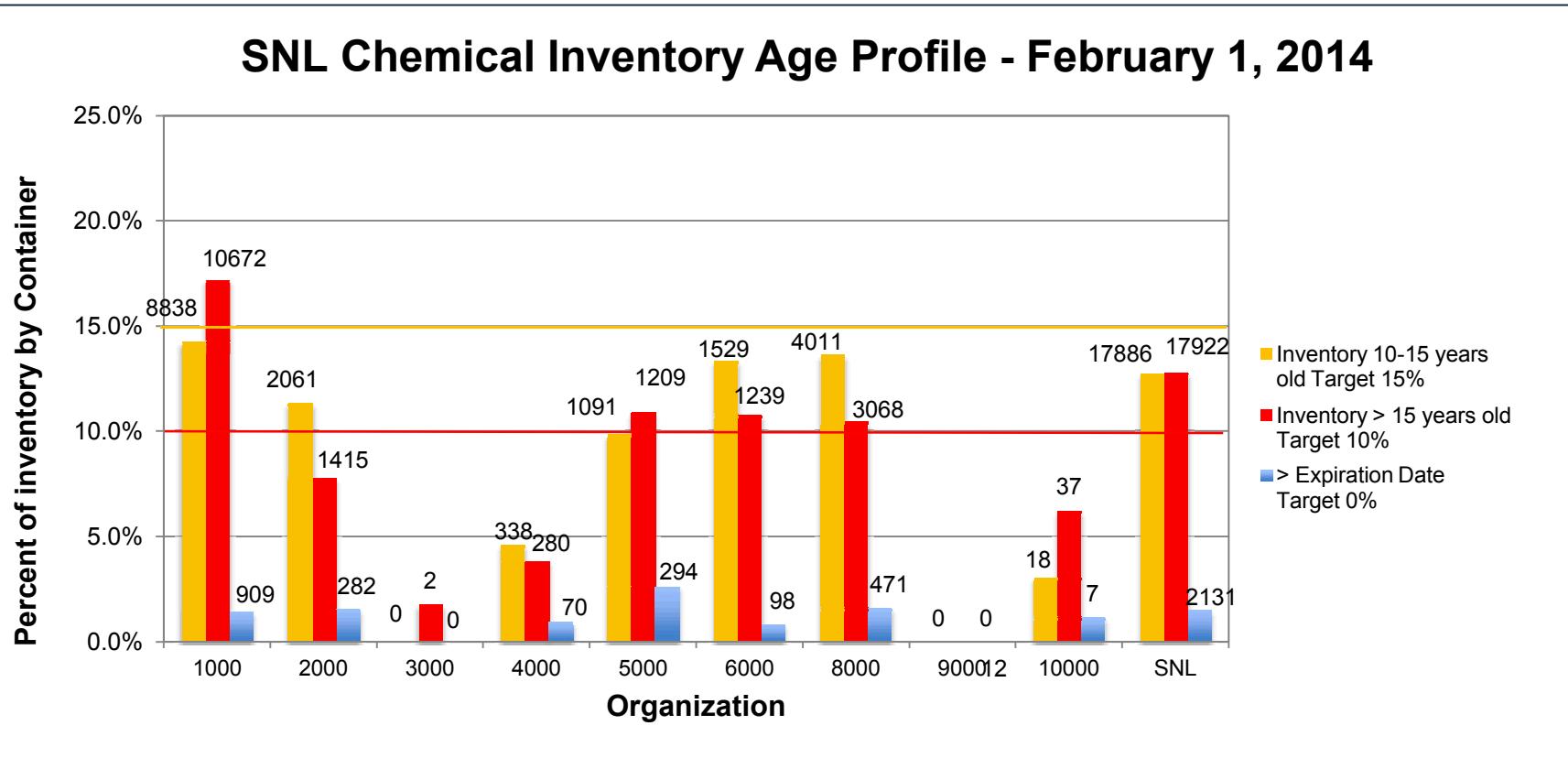
SSHEAC approved SNL/CA site EMS targets for excess chemicals:

- Chemicals between 10-15 years old: no more than 15% of total inventory
- Chemicals greater than 15 years old: no more than 10% of total inventory
- Chemicals older than their Manufacturer's expiration date: none (0%)
 - Note: If an expired chemical is deemed still usable, then a justification has to be written for each chemical and documented in the CIS database using the quarterly CIS Expired Chemical Management Process.

Chemical Inventory Age Profiles and Statistics

- [SNL](#)
- [8000](#)
- [8100](#)
- [8200](#)
- [8300](#)
- [8500](#)
- [8600](#)
- [8900](#)

Legacy Chemical Reduction - Overview



Legacy Chemical Reduction - Success

8000* Aged/Expired Chemical Reduction Status (February FY 2014)

| Org. | % of Inventory 10-15 Years Old (Target 15% or less) | | % of Inventory > 15 Years Old (Target 10% or less) | | % of Inventory Expired (Target 0%) | | Total Inventory Count | | |
|-------|--|-------------------|---|--------------------|---------------------------------------|-------------------|-----------------------|-------------------|-------------------|
| | Baseline 3/2011 | Current 2/2014 | Baseline 3/2011 | Current 2/20134 | Baseline 3/2011 | Current 2/2014 | Baseline 3/2011 | Current 2/2014 | Percent Change |
| 8100 | 14% | 20% | 13% | 14% | 2.2% | 0.5% | 2,631 | 2,284 | -13.2% |
| 8200 | 19% | 9% | 27% | 14% | 2.2% | 0.8% | 9,728 | 6,163 | -36.6% |
| 8300 | 15% | 17% | 18% | 13% | 1.4% | 1.4% | 4,683 | 3,838 | -18.0% |
| 8500 | 13% | 4% | 11% | 6% | 0.5% | 0.5% | 4,172 | 2,564 | -38.5% |
| 8600* | 11% | 15% | 6% | 9% | 3.1% | 2.1% | 15,942 | 14,525 | -8.8% |
| 8900 | 13% | 6% | 10% | 6% | 4.4% | 0% | 45 | 16 | -64.4% |
| 8000* | 13% | 14% | 14% | 10% | 2.4% | 1.5% | 37,201 | 29,390 | -21.0% |

* Includes SNL/NM 8600

Green = currently meeting target

Red = not meeting target

FY14 Legacy Chemical Reduction Targets and Status



SNL* NFPA 704 3 & 4 Aged/Expired Chemical Reduction Status (1/3/14)

| Org. | Baseline 10/2013 | Total Disposal* to Reach Goal | 1 st Quarter Disposal Goal | 1 st Quarter Disposals | Remaining Target FY14 Goal | Quarterly Goal Progress | Percent of Annual Goal Met | Percent Reduction |
|------|---------------------|--|---|--------------------------------------|----------------------------------|-------------------------------|----------------------------------|----------------------|
| 1000 | 6,533 | 980 | 245 | 542 | 438 | Exceeded | 55% | -13.2% |
| 2000 | 1,431 | 215 | 254 | 63 | 152 | Exceeded | 29% | -36.6% |
| 4000 | 208 | 31 | 8 | 21 | 10 | Exceeded | 68% | -18.0% |
| 5000 | 882 | 132 | 33 | 182 | -50 | Exceeded | 138% | -38.5% |
| 6000 | 1,205 | 181 | 45 | 206 | -50 | Exceeded | 128% | -8.8% |
| 8000 | 2,288 | 343 | 86 | 184 | 159 | Exceeded | 54% | -64.4% |
| SNL | 12,547 | 1,882 | 471 | 1,196 | 756 | Exceeded | 64% | -21.0% |

Green = currently meeting target

Red = not meeting target

Legacy Chemical Reduction - Challenges

- Defining the Problem and Develop the Legacy Reduction Process
 - Campaign vs. Perpetual Inventory Process Controls
 - Setting Organizational Expectations
 - Management Approval and Funding
- Evaluate the Legacy Reduction Process Risk
 - Reactive chemicals (peroxidizables, auto-polymerizables, reactive metals, chemical decomposition/pressurization)
 - Chemical compatibility and other storage Issues (toxicity, degraded containment)
 - Disposal Issues (operational, regulatory)
- Implement the Legacy Reduction Process Controls
 - Communicate and Coordinate with Chemical Owners and ES&H
- Executing the Legacy Reduction Process
 - Communicate and Coordinate with Chemical Owners and ES&H
 - Maintaining No Gain
- Feedback and Improve the Process

Legacy Chemical Reduction - SNL

- Questions?
- Thanks!
- Contact Information:

Mark Brynildson, Ph.D.
SNL/CA Chemical Information System Subject Matter Expert
Occupational Health & Safety Department 08517
Sandia National Laboratories/CA
PO Box 969 MS 9902
Livermore, CA 94551-0969
mebryni@sandia.gov
(925) 294-3150 (office)