

Unit Dose Liquid Laundry Detergent Exposures: An Italian and a US Poison Center Comparison

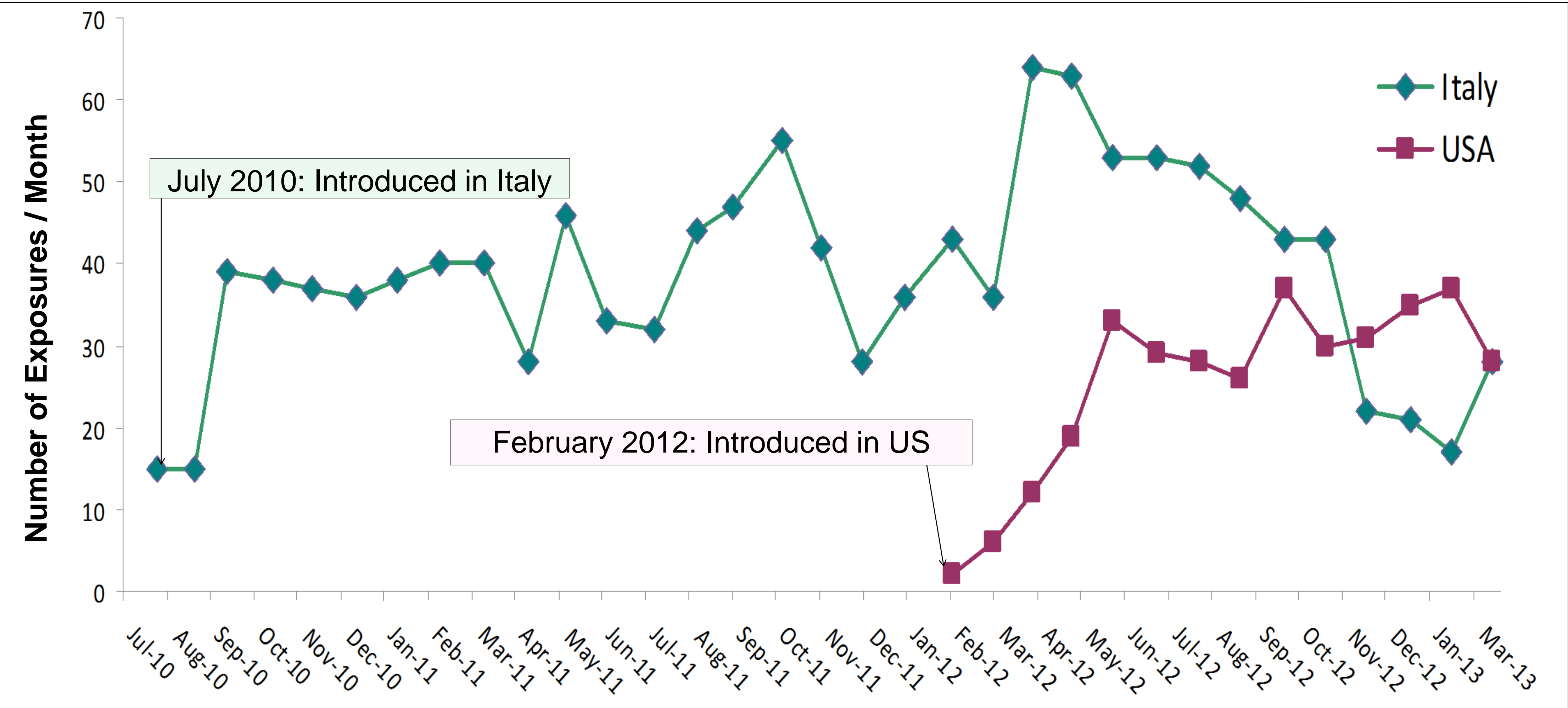
A Celentano¹, F Sesana¹, G Milanesi¹, F Davanzo¹, CM Deutsch², AC Bronstein², DA Spyker³

¹Milan Poison Control Center - Azienda Ospedaliera Ospedale Niguarda Ca' Granda - Milan, Italy

²Rocky Mountain Poison & Drug Center - Denver Health, Denver, CO, US ³Uniformed Services University of the Health Sciences, Bethesda, MD, US

Introduction

Liquid unit dose laundry detergents were introduced in 2001 in the UK, 2010 in Italy, and 2012 in the US. Each unit dose contains between 15 - 32 mL of highly concentrated cleaning agents in a water-soluble membrane. Transparency of packaging, bright colors and softness like bonbons or toys make them attractive to children. Formulations and packaging vary from country to country. Unexpected central nervous system and respiratory depression has been associated with some exposures in several countries.



Methods

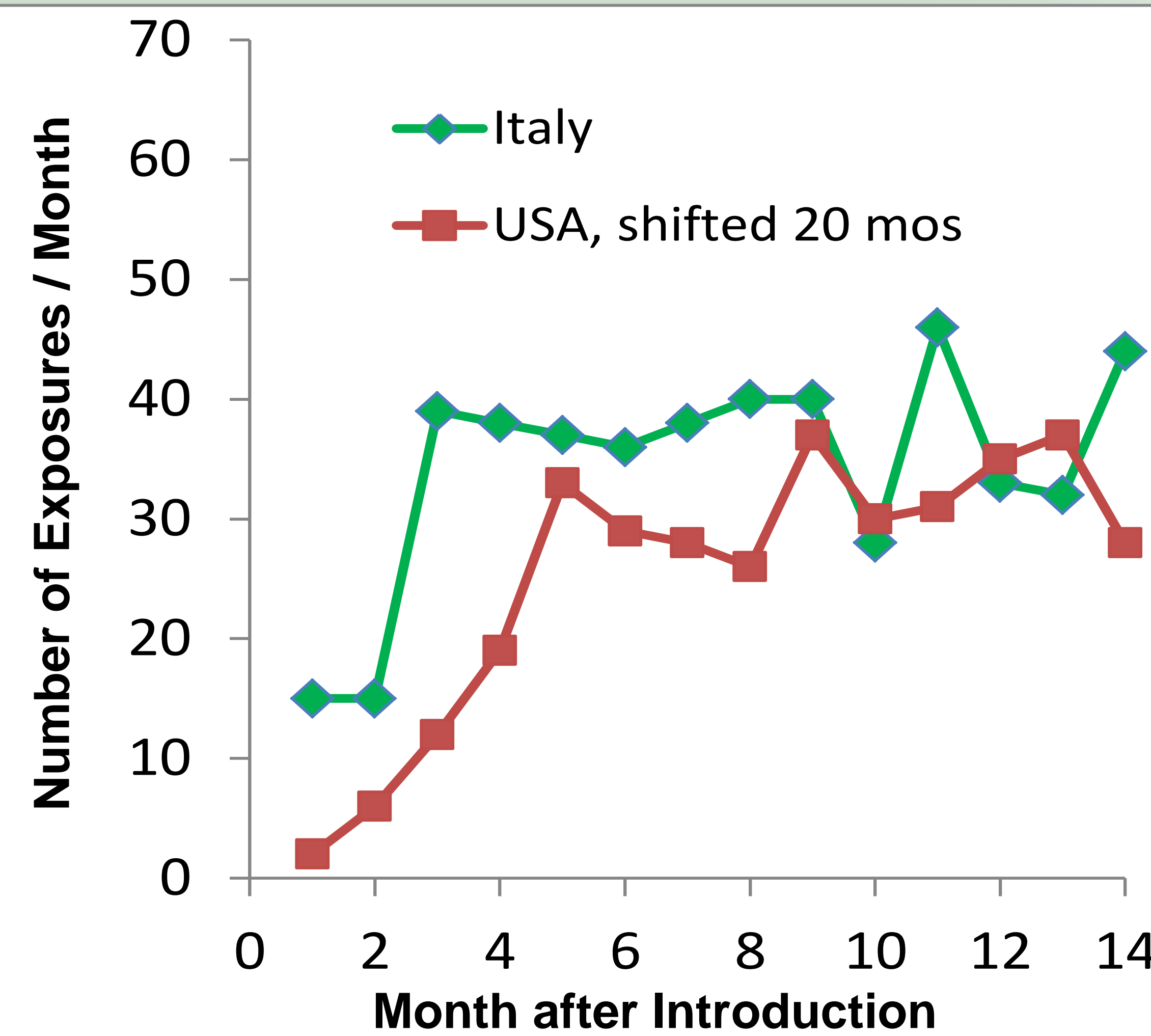
We examined the unit dose liquid laundry detergent human exposures from an Italian Poison Center (I-PC) and from a United States PC (US-PC) from 1-Jul-2010 through 31-Mar-2013 using descriptive statistics (mean, SD, SEM, 90% CIs), graphics over time, chi-square, and ANOVA as appropriate via SAS JMP 9.0.0 (SAS Institute, Cary, NC). Scaled exposure counts were also examined based on the population served (PS) and total number of exposure calls received by the PC. Statistical significance was defined as $p < 0.05$ (2-tailed). Data translation and harmonization was done by the authors. Exposure outcomes were classified according to a harmonized Poisoning Severity Score (PSS).

Results

- Ingestion was the most common route of exposure followed by ocular, dermal, and multiple routes
- Medical outcomes - harmonized poison severity score (PSS)
- No fatalities were reported in either country
- Management focused on symptomatic and supportive care

Limitations

These data have the usual limitations of a passive reporting system with telephone follow up. A meaningful comparison of hazards across countries would be enhanced with a measure of denominator (product sales and distribution).



Conclusions

- Although the products were introduced at different times, the outbreak or epicurves show a similar pattern.
- Despite gender differences, CEs and outcomes (PSS) were similar.
- Global product marketing requires standardized, harmonized PC data collection to detect and provide situational awareness of cross border outbreaks.
- International cooperation in this area is recommended.

SUMMARY OF RESULTS

Measure	Italy PC	US PC	Combined
Description of Cases			
Number of Exposures	1,275	353	1,628
Date of first Exposure	29-Jul-10	28-Feb-12	
Number and Month of Maximum Exposures	64 at 22 months	36 at 28 months	86 at 24 months
Max Exposures/month/million (PS)	1.49	3.41	4.28
Age-years: mean \pm SD	3.55 \pm 8.49	3.88 \pm 9.03	3.62 \pm 8.61
Age-years: median [25,75%] tiles	2 [1.42, 3.17]	2 [1.42, 3]	2 [1.42,3]
Gender: % females, % males	48.4/51.6%	40.5/59.2%	48.7/53.2%
Medical Outcomes: number (%)			
No effect	271 (21%)	90 (25%)	361 (22%)
Minor effect	840 (66%)	225 (64%)	1,065 (65%)
Moderate effect	80 (6.3%)	18 (5.1%)	98 (6%)
Major effect	16 (1.3%)	2 (0.6%)	18 (1.1%)
Intubation	3 (0.24%)	1 (0.28%)	4 (0.25%)
Clinical Effect Categories: number (%)			
Gastrointestinal	802 (50%)	187 (47%)	989 (50%)
Respiratory	224 (14%)	48 (12%)	272 (14%)
Ocular	164 (10%)	31 (8%)	195 (10%)
Dermal	98 (6.2%)	57 (14.4%)	155 (7.8%)

