

Comparison of Phthalate Testing Protocols

Updated 11/07

Concentrations of Phthalate Esters and Identification of Other Additives in PVC Children's Toys.

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Greenpeace Research Laboratories,
Department of Biological Sciences,
University of Exeter, ESPR. Environ. Sci. &
Poll. Res. Vol 7, 2000

Sorting: Chlorine identified using XRM
(X-Ray Microanalysis)

Sample Preparation: toy was
immersed in liquid nitrogen and then
grated or cut with scissors. 1 g of the
shredded sample was tested

Solvents used: Hexane

Extraction Method: Sonication and
evaporation

Instrument Used: GC-MS (HP)

QC: Spiking and standard addition
according to US EPA 606 (USEPA
1984, Method for Phthalate Analysis in
Water)

Comments:

- DINP and DEHP most abundant
- Squeeze and Inflatable toys were consistently phthalate plasticized PVC
- Study focused on toys in which phthalates comprised 10-40% weight of the toy & ID phthalates in Non-PVC toys
- Wide range study

Analytical chemical control of phthalates in toys. NERI Technical Report, No. 404 2002

S. Rastogi et al.

National Environmental Research Institute
Ministry of the Environment- Denmark

Sorting: Not discussed. The products
were provided by the Danish
Environmental Protection Agency

Sample Preparation: Not described in
report.

Solvents used: Dichloromethane

Extraction Method: Soxhlet extraction
and concentration for qualitative
analysis. For quantitative "fresh extracts"
were prepared to avoid
concentration/dilution

Instrument Used: GC- MS and GC-
FID

QC: Not Discussed.

Comments:

- They noted that using their method when a product contains both DINP and DNOP DNOP cannot be determined because of interference of DINP
- Maximum concentration of 0.05%
- GC-FID was used as a quantification tool, GC-MS as a qualitative tool

Test Methods Section- Method C-34 Determination of Phthalates in Polyvinyl Chloride Consumer Products

Product Safety Reference Manual –
Laboratory Polices and Procedures-Health
Canada - 2006

Sorting: Not discussed

Sample Preparation: Sample was cut
into pieces that had a weight less than
or equal to .2g. 1 g of shredded sample
was tested

Solvents used: Dichloromethane,
methanol, acetone

Extraction Method: Refrigeration of
sample with solvent for 12hrs, filtering
and evaporation

Instrument Used: Rotovap for
evaporation and GC-MS

QC: Blank control, standard in matrix

Comments:

- Used a very small part of the toy.
- There is no discussion on sorting or results.
- Recovery range 74%-109%