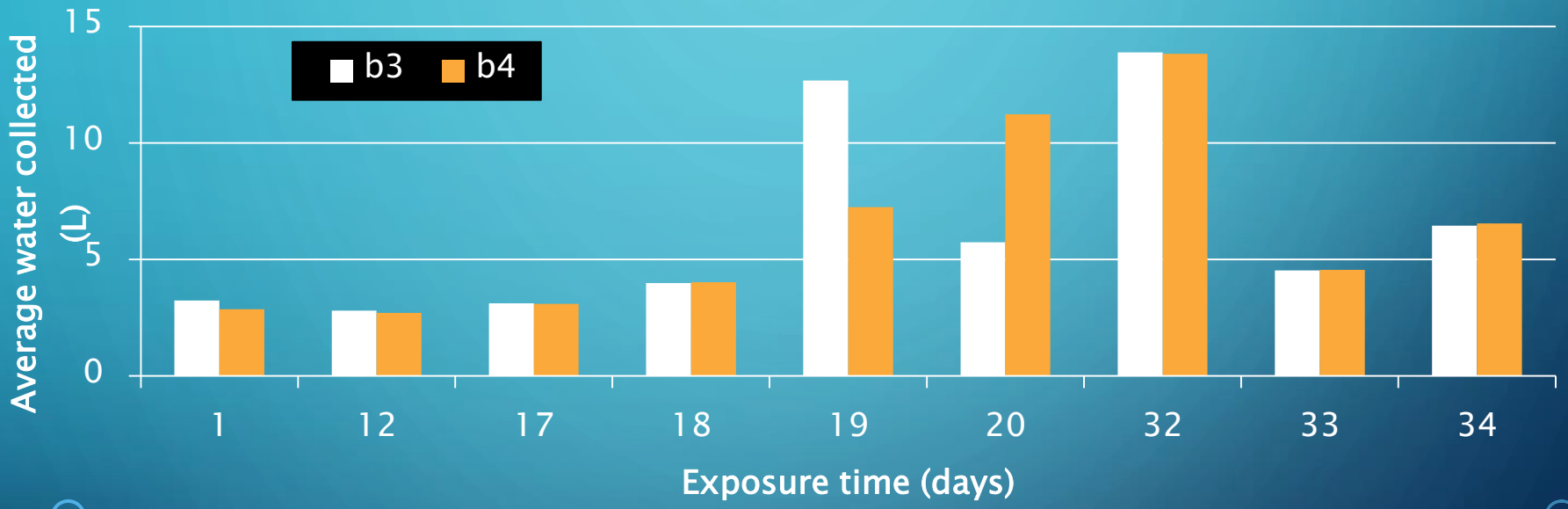
EPTW COOP UPDATES

BMP VERIFICATION STUDY

- BMP testing completed for southern pine, Douglas-fir and SPF on decking

RUNOFF COLLECTED FROM SOUTHERN PINE DECKS TREATED WITH COPPER AZOLE

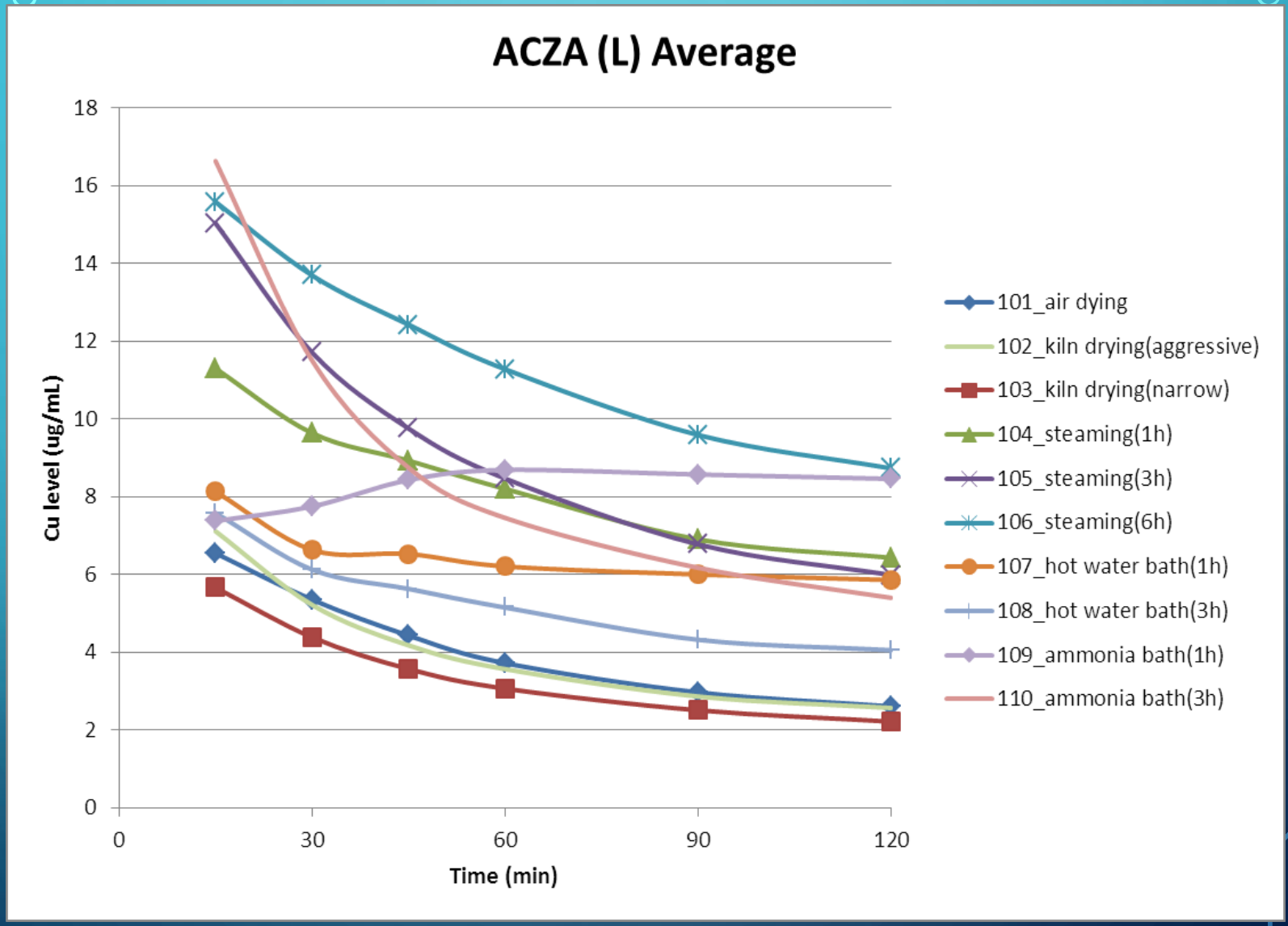


BMP VERIFICATION STUDY

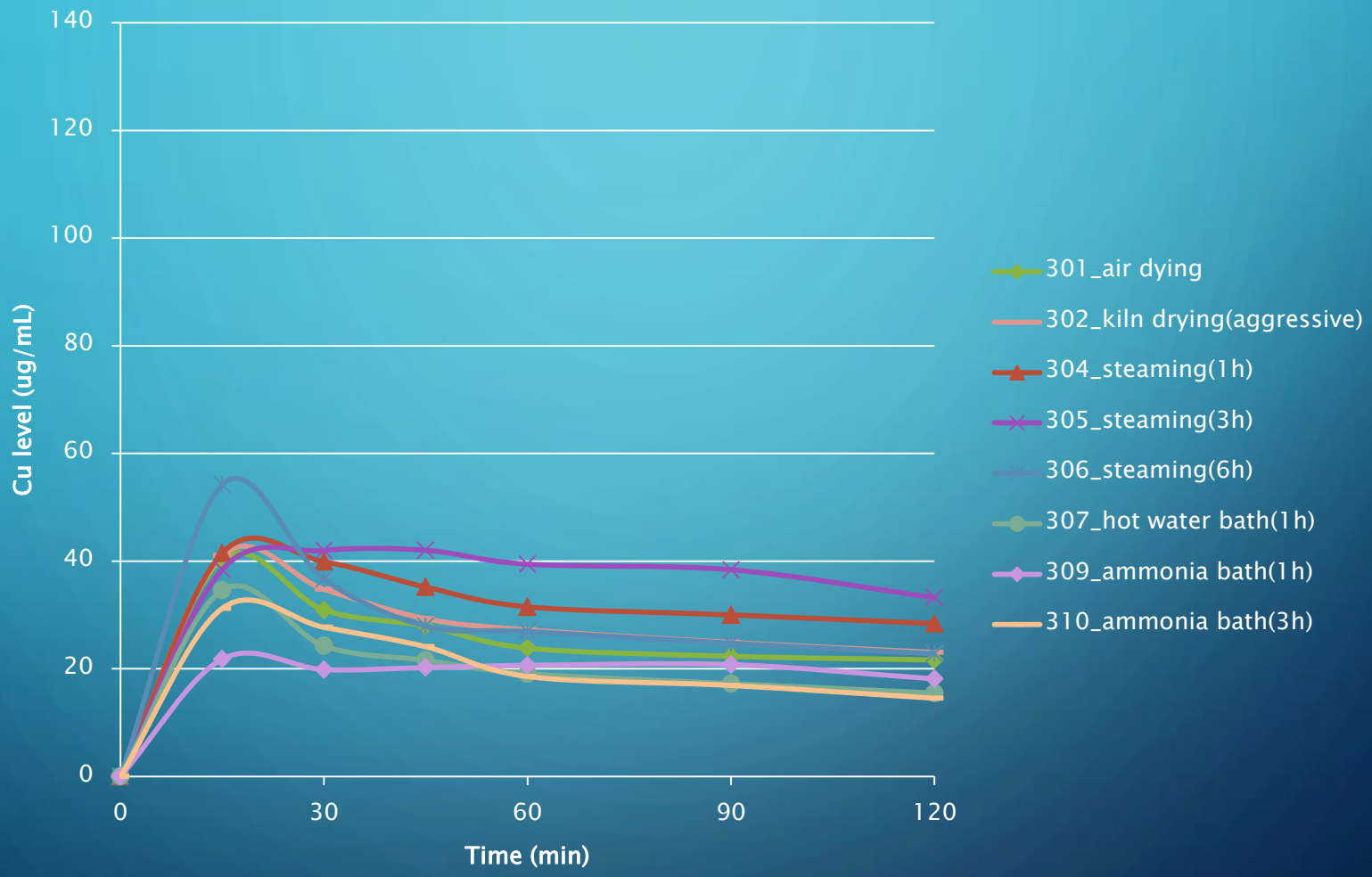
- BMP testing completed for southern pine, Douglas-fir and SPF on decking
- No consistent effect of BMP's
- Why do them?

BMP TEST

- Some plants applied BMP processes as part of prep on all materials
- Time lag between treatment and exposure was long- allowing materials to become immobilized
- Test results show little difference


ACZA (L) Average
Cu level (ug/mL)
18
16
14
12
10
8
6
4
2
0
0
30
60
90
120
Time (min)
101_air dying
102_kiln drying(aggressive)
103_kiln drying(narrow)
104_steaming(1h)
105_steaming(3h)
106_steaming(6h)
107_hot water bath(1h)
108_hot water bath(3h)
109_ammonia bath(1h)
110_ammonia bath(3h)

CA (L) Run 3


140
120
100
80
60
40
20
0
Cu level (ug/mL)
0
30
60
90
120
Time (min)
301_air dying
302_kiln drying(aggressive)
304_steaming(1h)
305_steaming(3h)
306_steaming(6h)
307_hot water bath(1h)
309_ammonia bath(1h)
310_ammonia bath(3h)

CONTROLLED BMP TEST

- Treat all material to retention (no BMP)
- Apply BMP's under controlled conditions
- Evaluate migration in overhead rainfall device

BMP II

- SPF and Southern pine
- Treat with ACQ, CA, penta, Cu naph & creosote
- Freeze- then apply BMP treatments
- Expose in overhead rainfall device to quantify

PRO'S AND CON'S

- More work
- Artificial

PRO'S AND CON'S

- More work
- Artificial
- Better control of variables
- Results more reproducible and defendable

EVALUATE THE POTENTIAL FOR COATINGS TO LIMIT MIGRATION

WHY?

- Agencies have recently begun to require that coatings be applied to treated wood employed over water
- Coatings tend to have short service lives
- Limited data on coating effects on migration

PROCEDURES

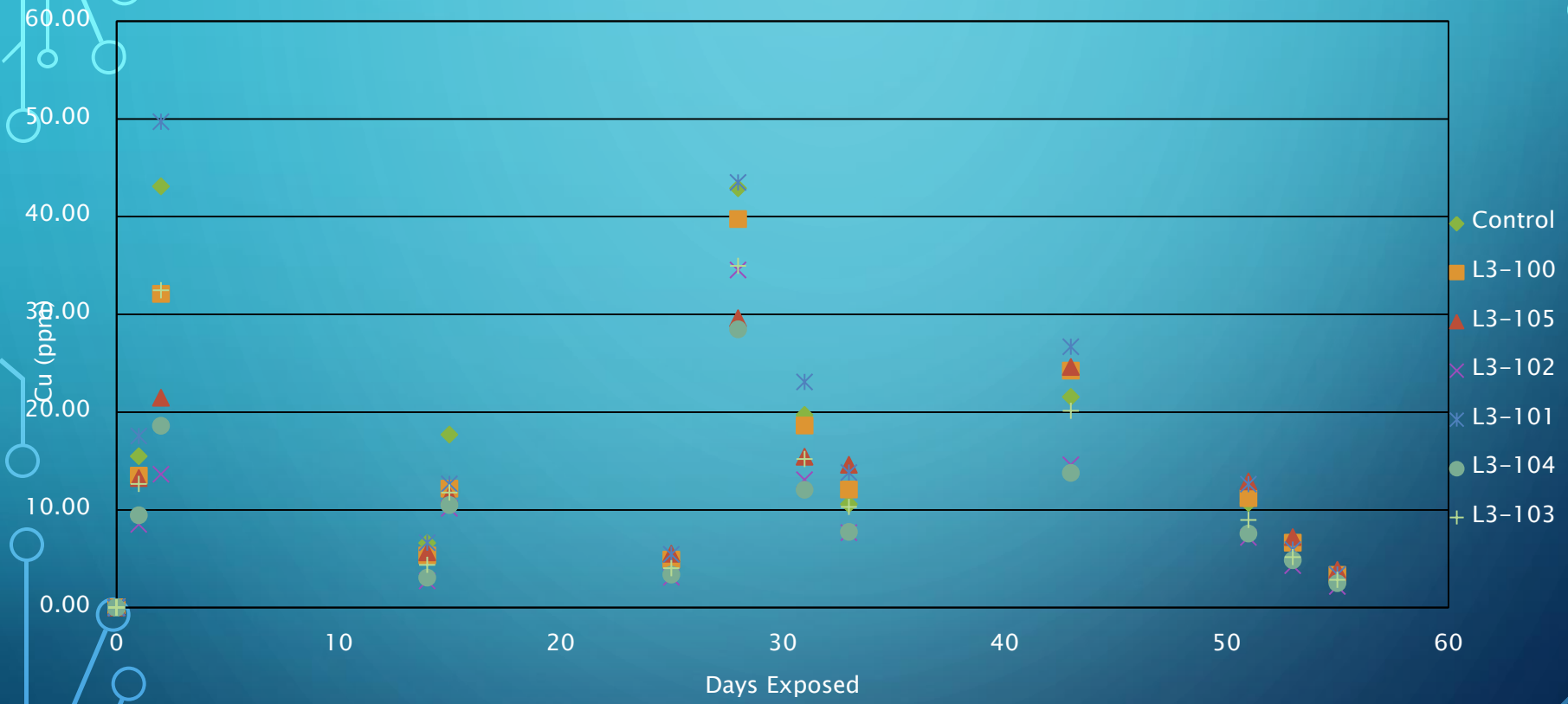
- ACZA treated Douglas-fir decking (6.4 kg/m^3)
- Construct small decks with non-treated super-structure
- Expose outdoors in plastic bins
- Collect all rainwater runoff- weigh to determine total collected
- Acidify a sub-sample and analyze by ICP

COATINGS EVALUATED

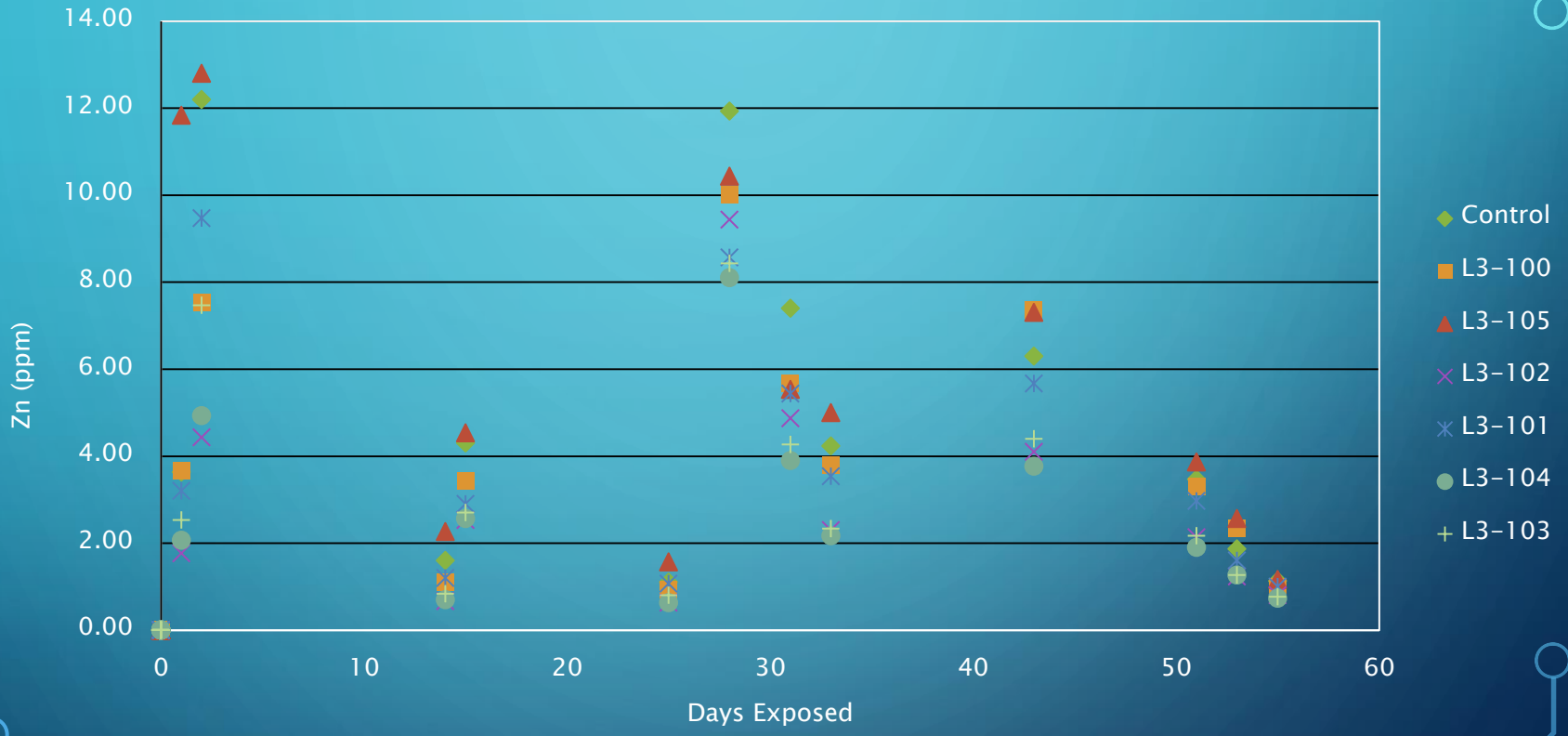
- PVA
- Polyurethane
- SBR
- Vinyl Acrylic Ethylen
- Acrylic
- Halogenated Resin

AC

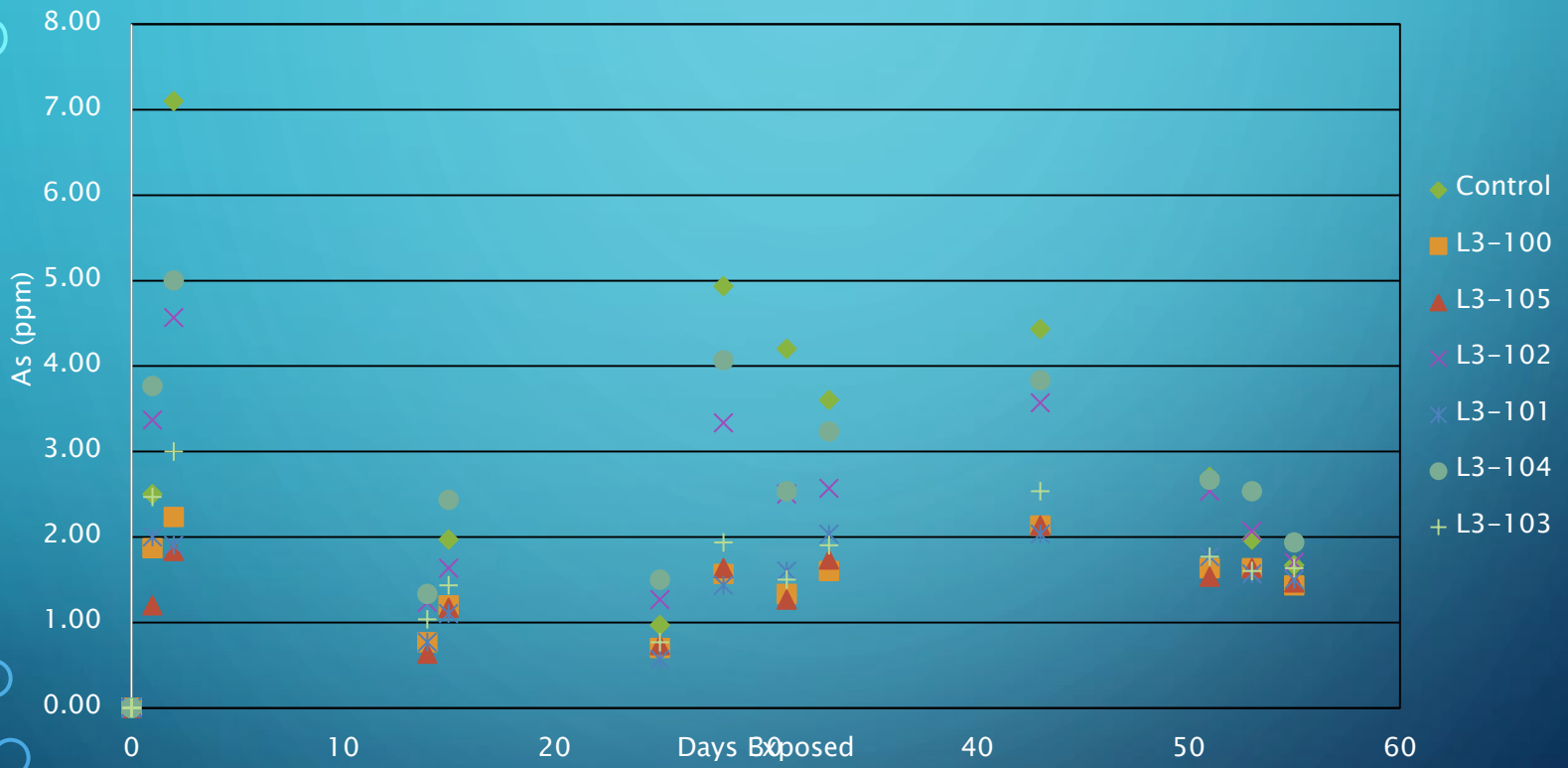
COPPER LEVEL BY TIME



ZINC LEVEL BY TIME

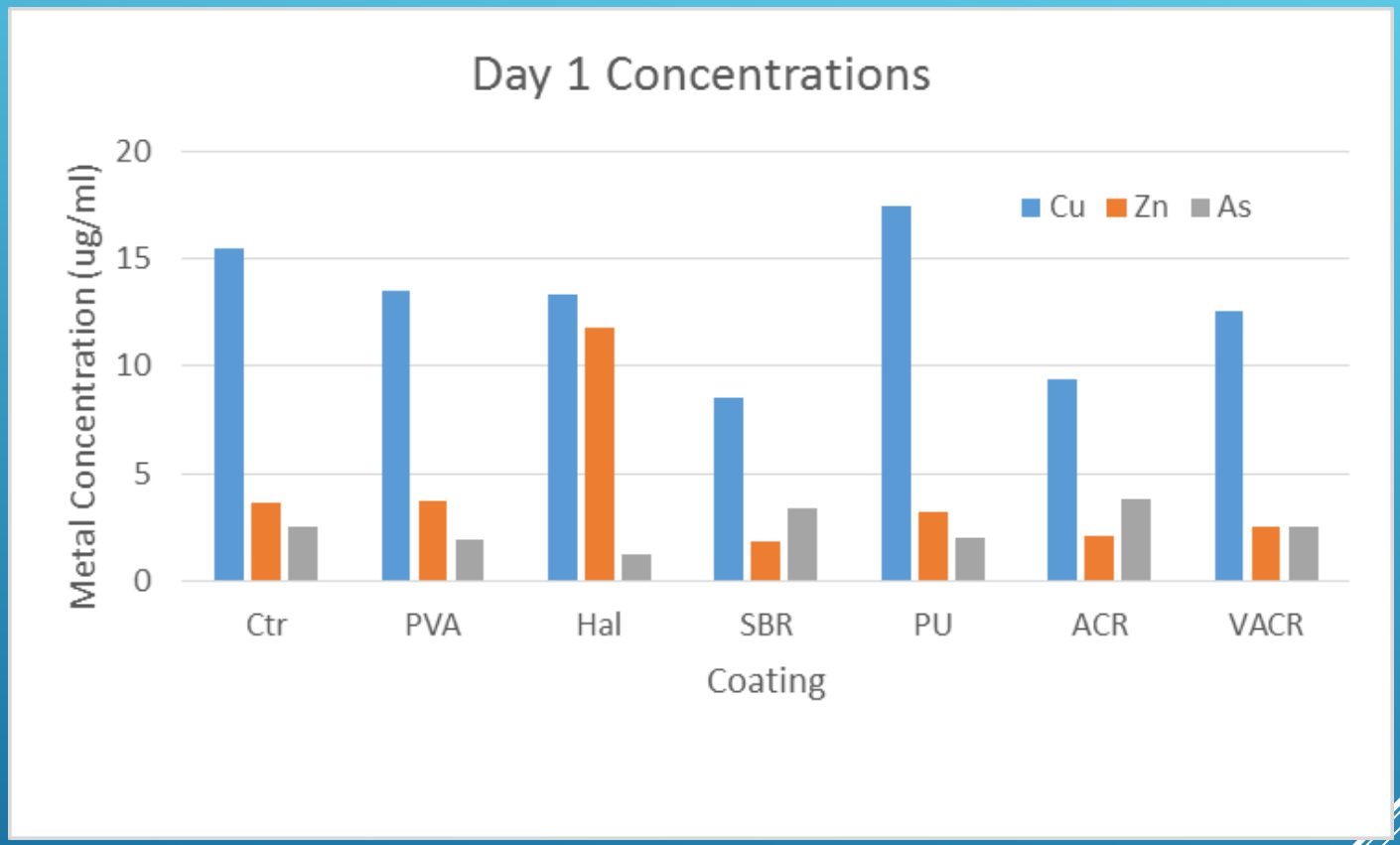


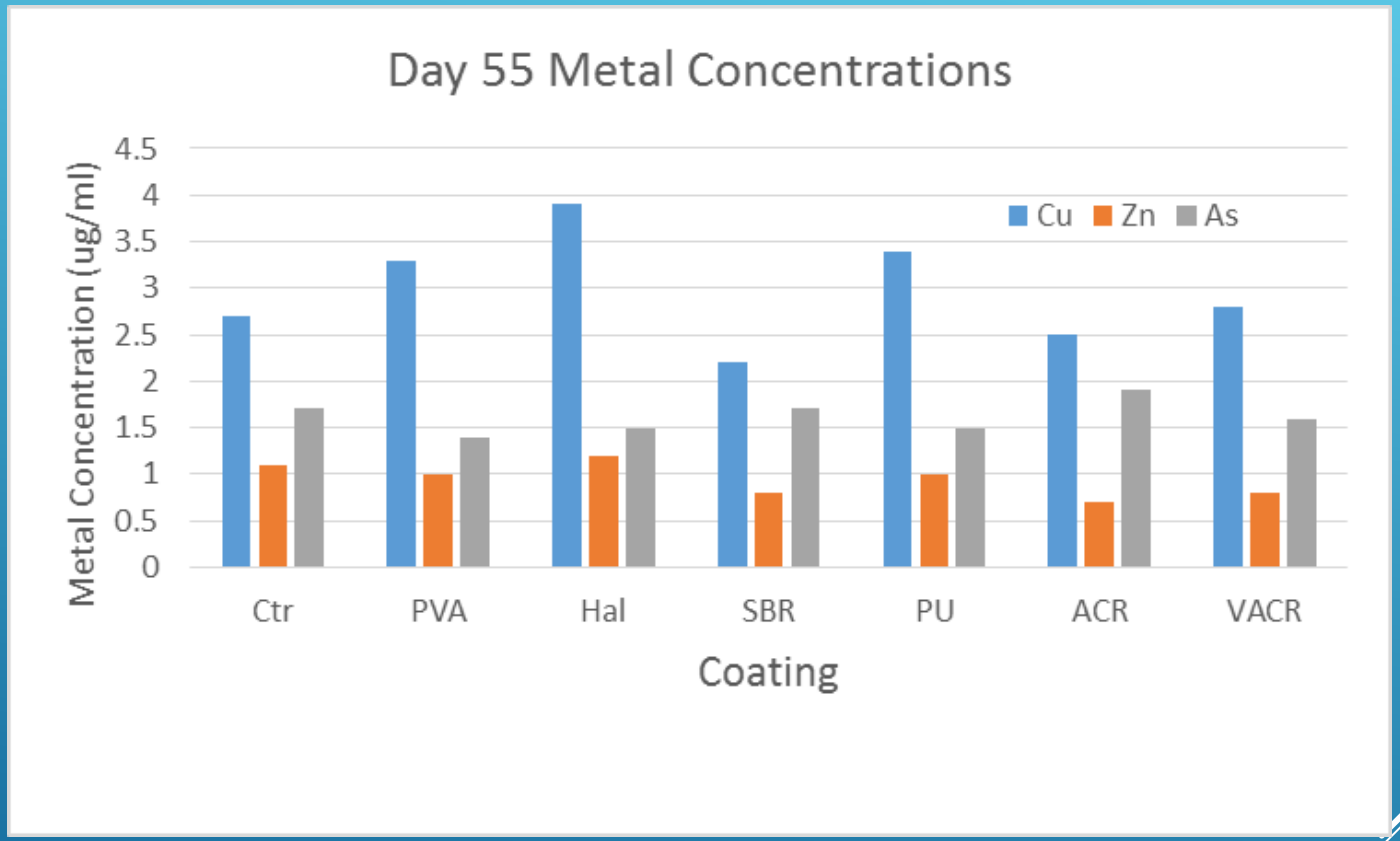
ARSENIC LEVEL BY TIME

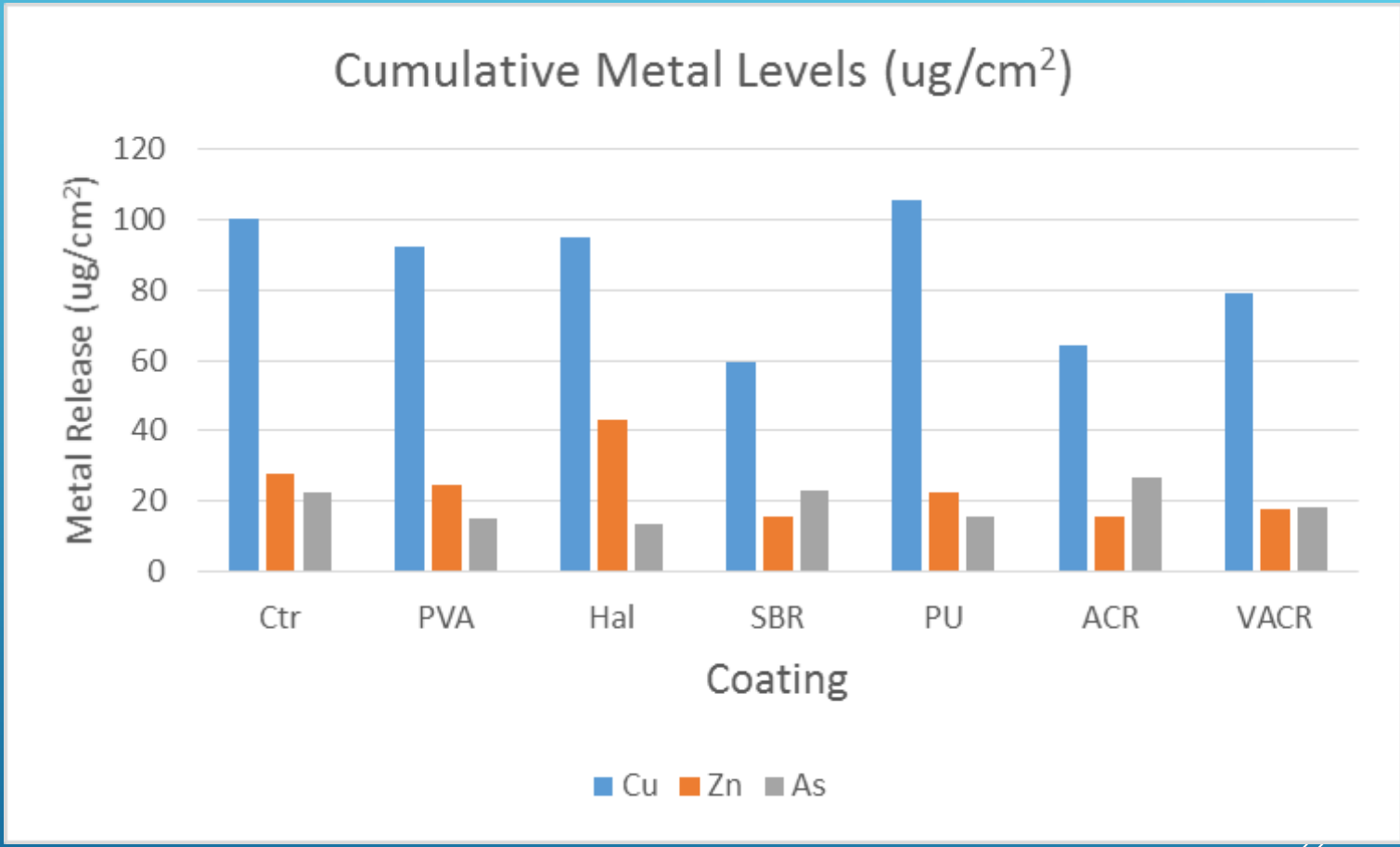


METAL LOSSES

- Cu: 2 to 50 ppm
- Zn: 0.5 to 13 ppm
- As: 0.5 to 7 ppm


Day 1 Concentrations
Metal Concentration (ug/ml)
20
15
10
5
0
Cu
Zn
As
Ctr
PVA
Hal
SBR
PU
ACR
VACR
Coating


Day 55 Metal Concentrations
Metal Concentration (ug/ml)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Cu
Zn
As
Ctr
PVA
Hal
SBR
PU
ACR
VACR
Coating


Cumulative Metal Levels (ug/cm2)
Metal Release (ug/cm2)
120
100
80
60
40
20
0
Ctr
PVA
Hal
SBR
PU
ACR
VACR
Coating
Cu
Zn
As

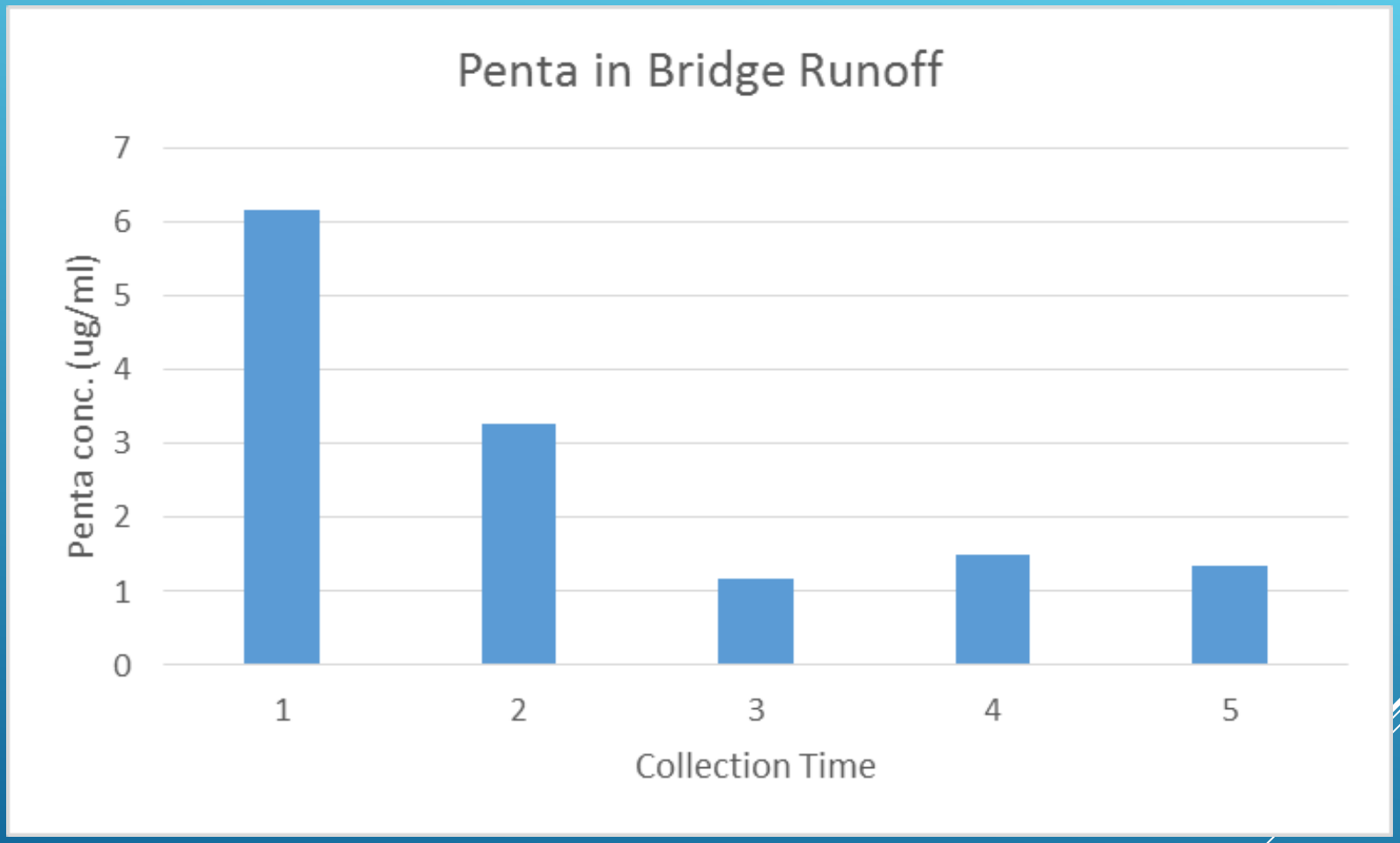
PRELIMINARY CONCLUSIONS

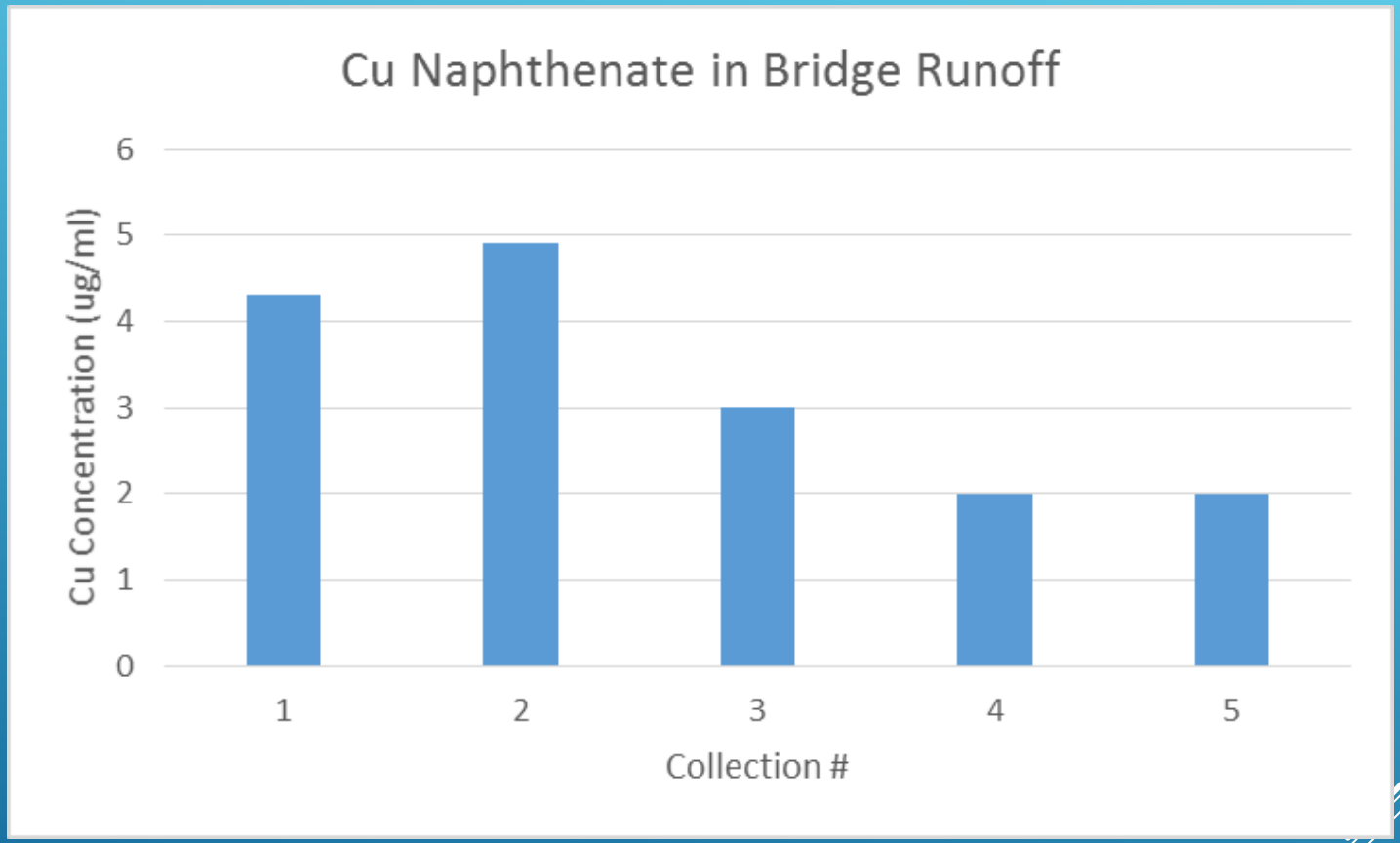
- Some coatings reduced metal migration
- Coatings inconsistent with regard to which metals were affected

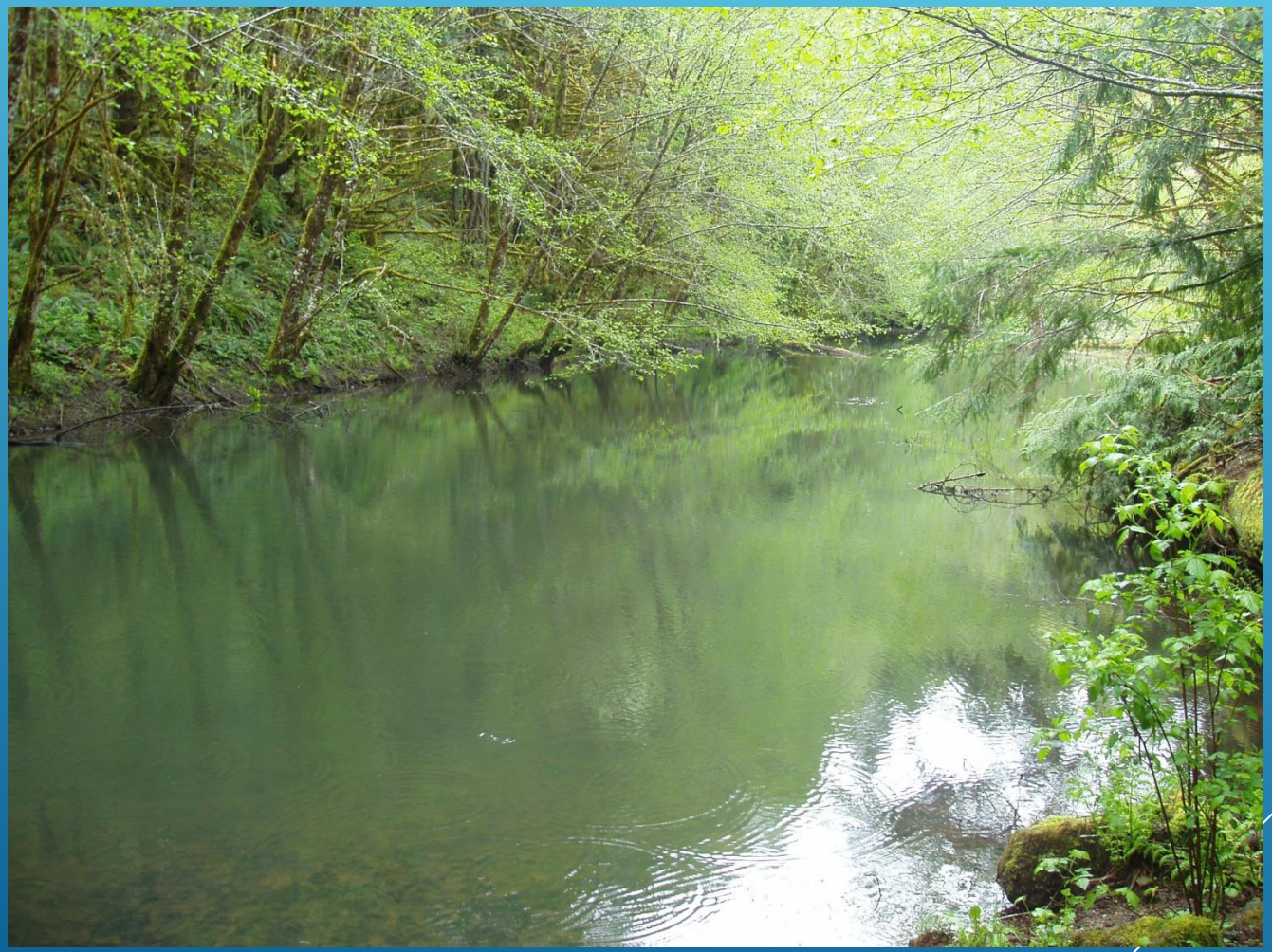
FIELD TESTING

- Need more demonstration projects using Screening Level Assessment and BMP's
- Forest Service bridge near Sweet Home, OR (penta deck, Cu naph glu-lams)
- Seeking 3-4 projects to monitor

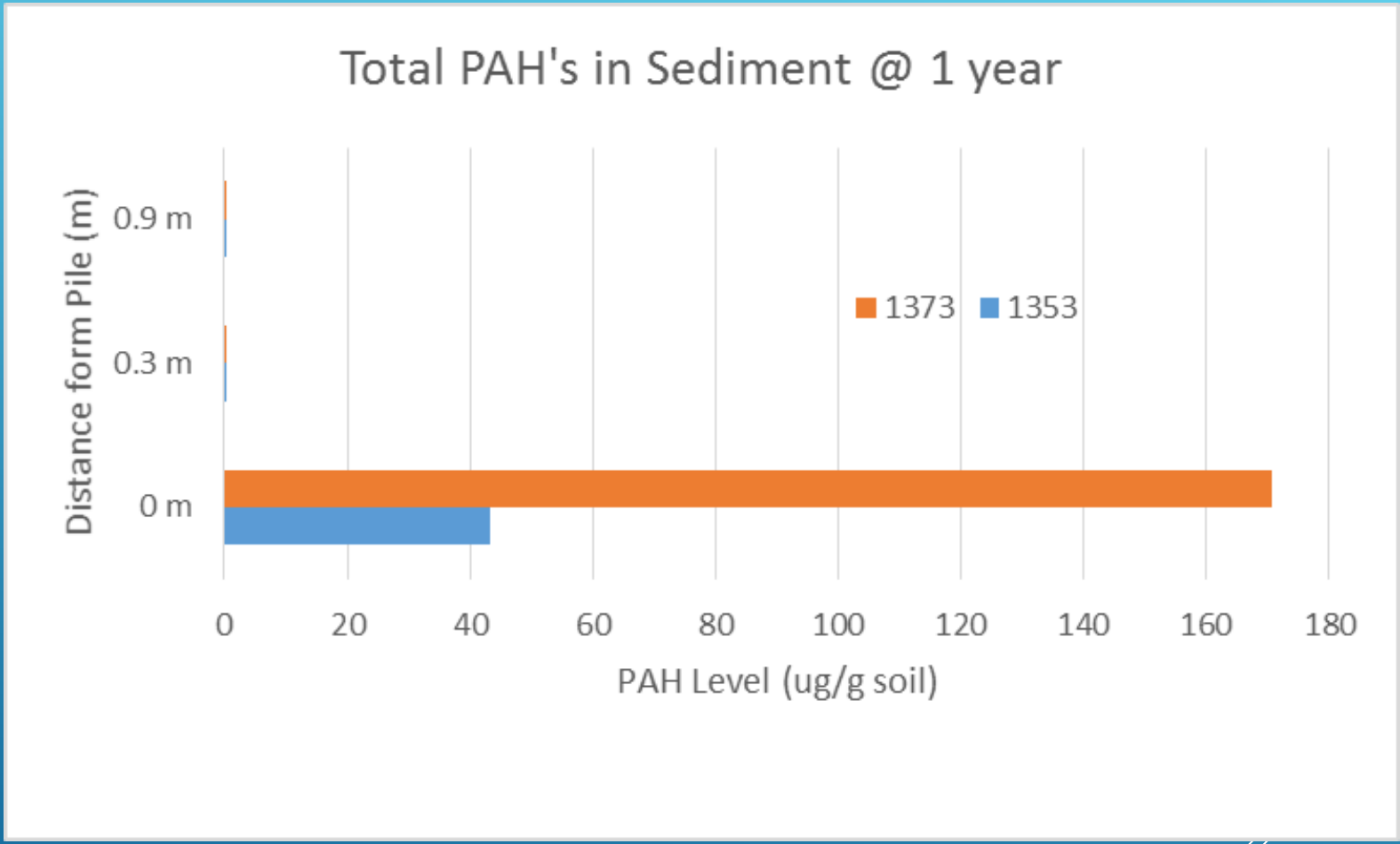
H


Penta in Bridge Runoff
Penta conc. (ug/ml)
7
6
5
4
3
2
1
0
1
2
3
4
5
Collection Time


Cu Naphthenate in Bridge Runoff
Cu Concentration (ug/ml)
6
5
4
3
2
1
0
1
2
3
4
5
Collection #




INCHES
LABORATORY APPARATUS. FURNITURE
SCIENTIFIC INSTRUMENTS & CHEMICALS
VWR


Total PAH's in Sediment @ 1 year
Distance form Pile (m)
0.9 m
0.3 m
0 m
1373
1353
0
20
40
60
80
100
120
140
160
180
PAH Level (ug/g soil)

POND STUDIES

- PAH's present near pile
- PAH's decline sharply with distance
- Standard soil exposure seems to be working

BMP WORKSHOPS

- 4 Workshops held in Oregon
- On-line workshop using Adobe Connect- 25 participants- future .