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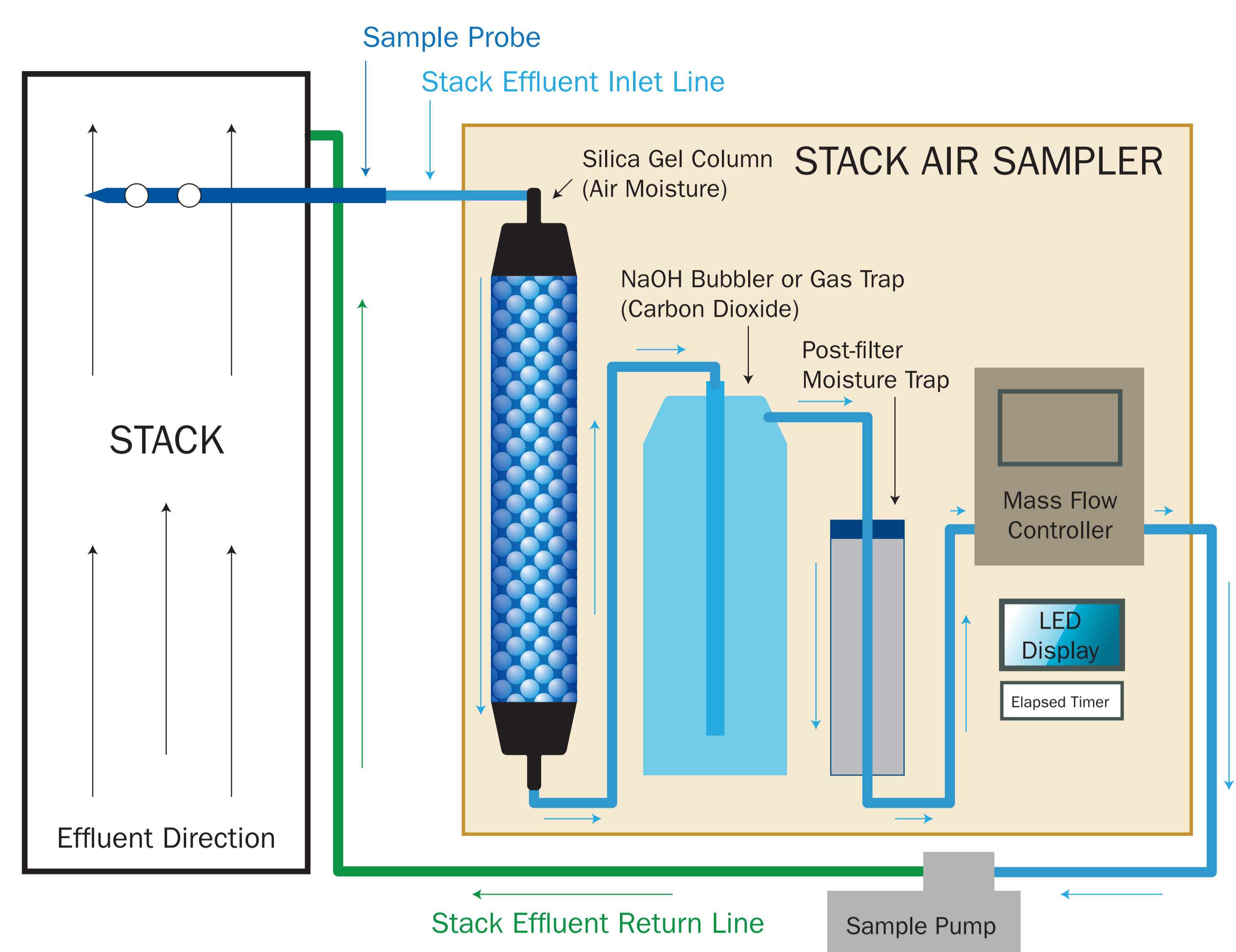
INTRODUCTION

At Berkeley Lab, stack exhaust is collected

- On silica gel for ^3H
- In NaOH solution for ^{14}C
- Over 1-month sampling periods

Collection vessels were

- Custom-made glass columns
- Sealed by screwtop or glass-on-glass friction fittings



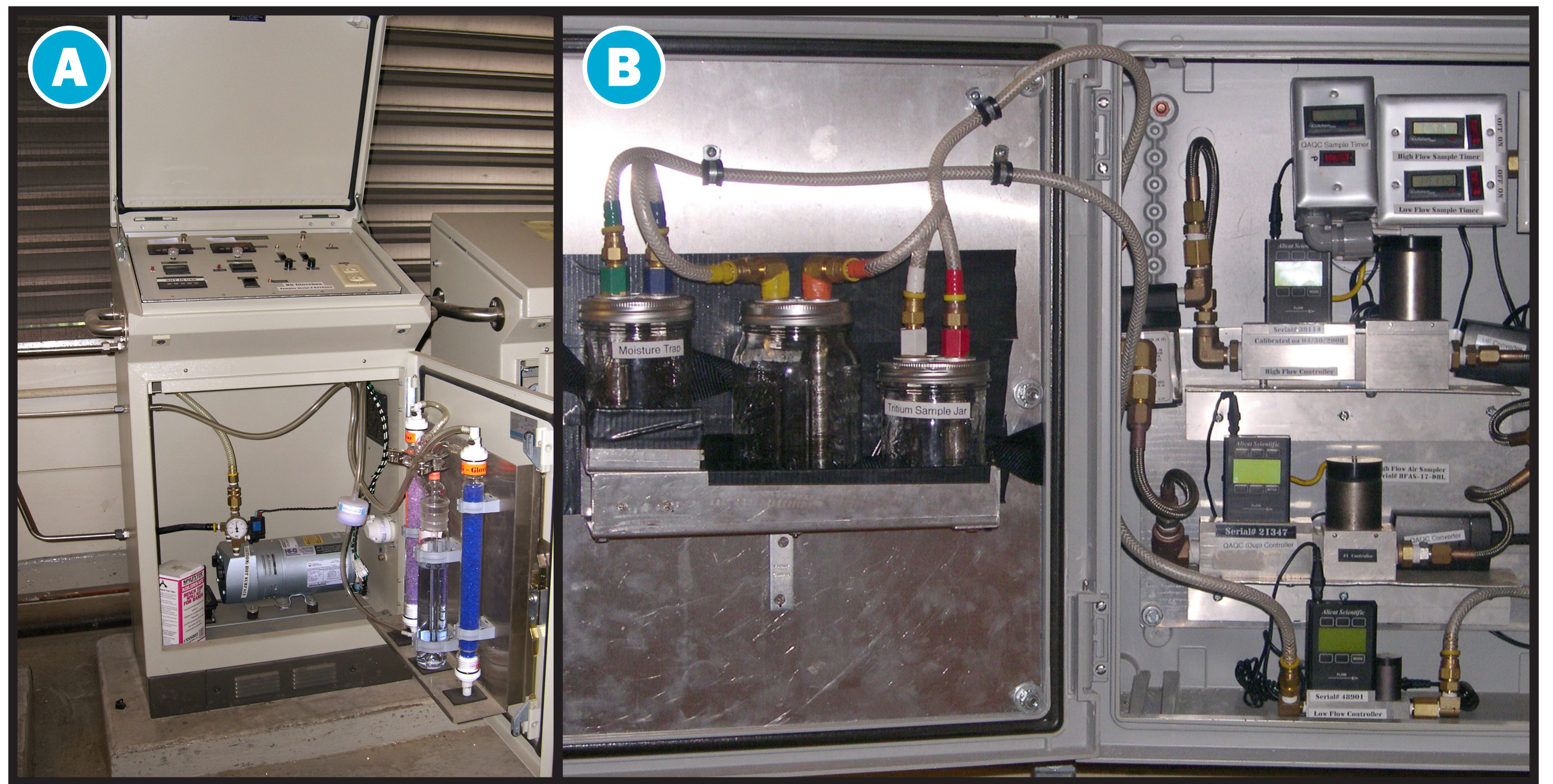
PROBLEM

A Old System

- Difficult to seal leaks
- Expensive glassware
- Leaks during transport
- Large and unwieldy

B New System

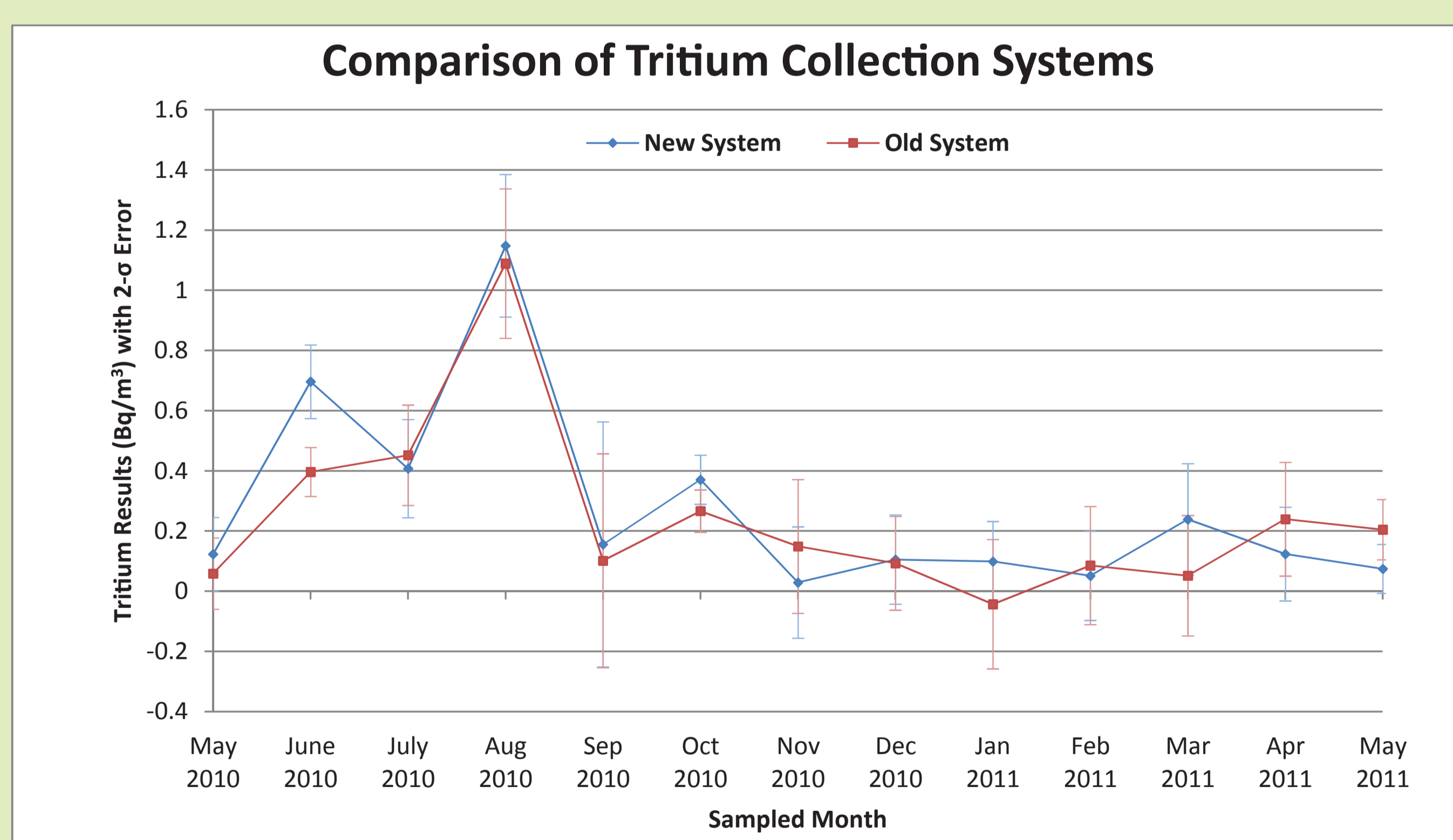
- Screw tops don't leak
- Inexpensive glassware
- Tightly closed in transport
- Small and easily mounted



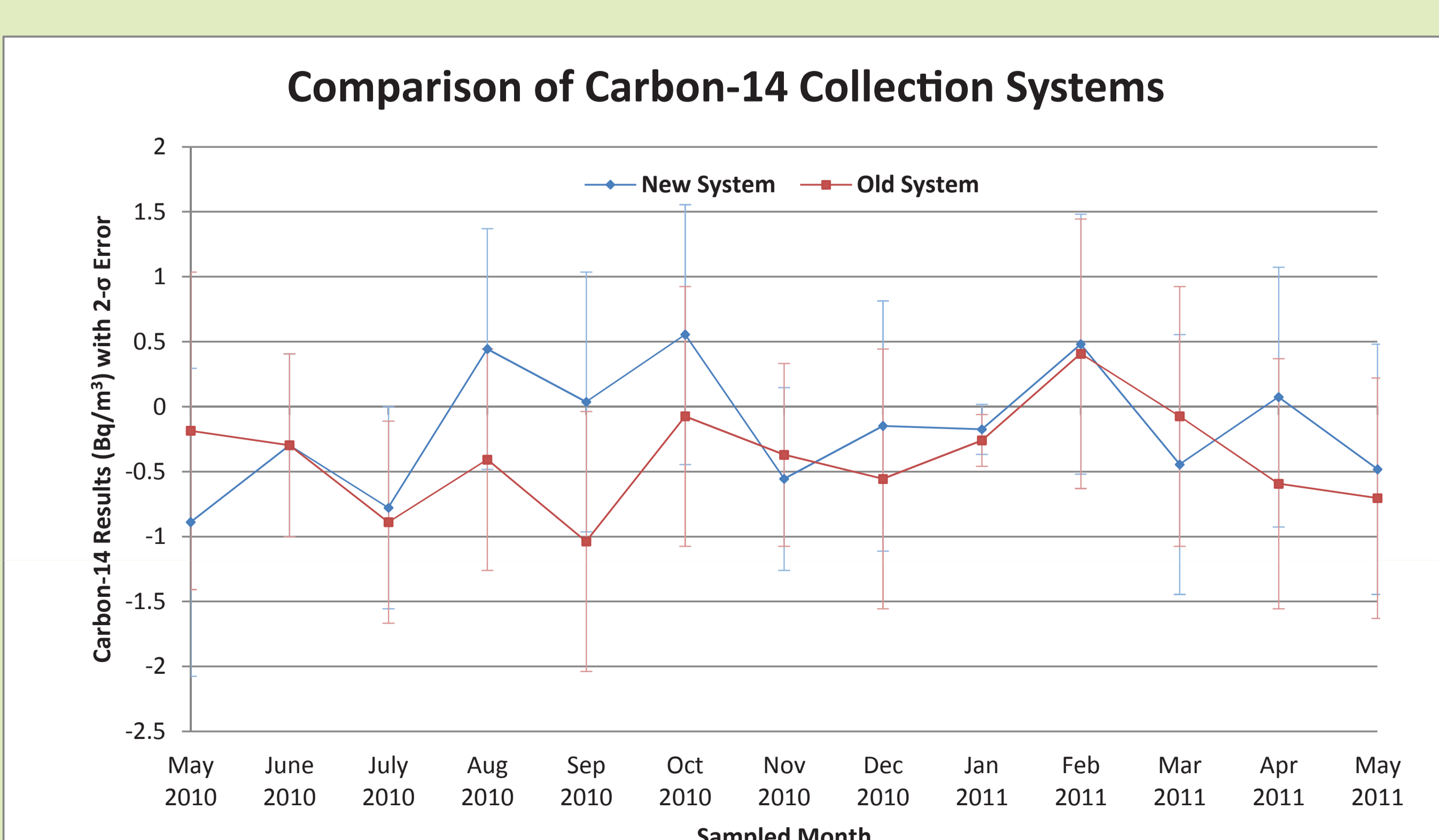
METHOD

- Installed colocated sample probes in stack
- Operated both systems side-by-side for 1 year
- Collected samples continuously (at 25 ml/min) for 1-month intervals

RESULTS



Detectable ^3H during test period; redesigned system more efficient



No detectable ^{14}C during test period; similar results with both systems

CONCLUSIONS

New redesigned system provides

- Equal, if not better, collection efficiency
- More robust glassware, no breakage
- Tighter connections, fewer leaks
- Inexpensive collection containers

Put into use at Berkeley Lab on 1 October 2011

About the Authors

Linnea Wahl and John Jelinski support the Environmental Radiological Protection Program at Lawrence Berkeley National Laboratory in Berkeley, California. Linnea Wahl, certified health physicist, is the program lead for stack sampling. John Jelinski provides quality assurance and equipment development and maintenance services.

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