



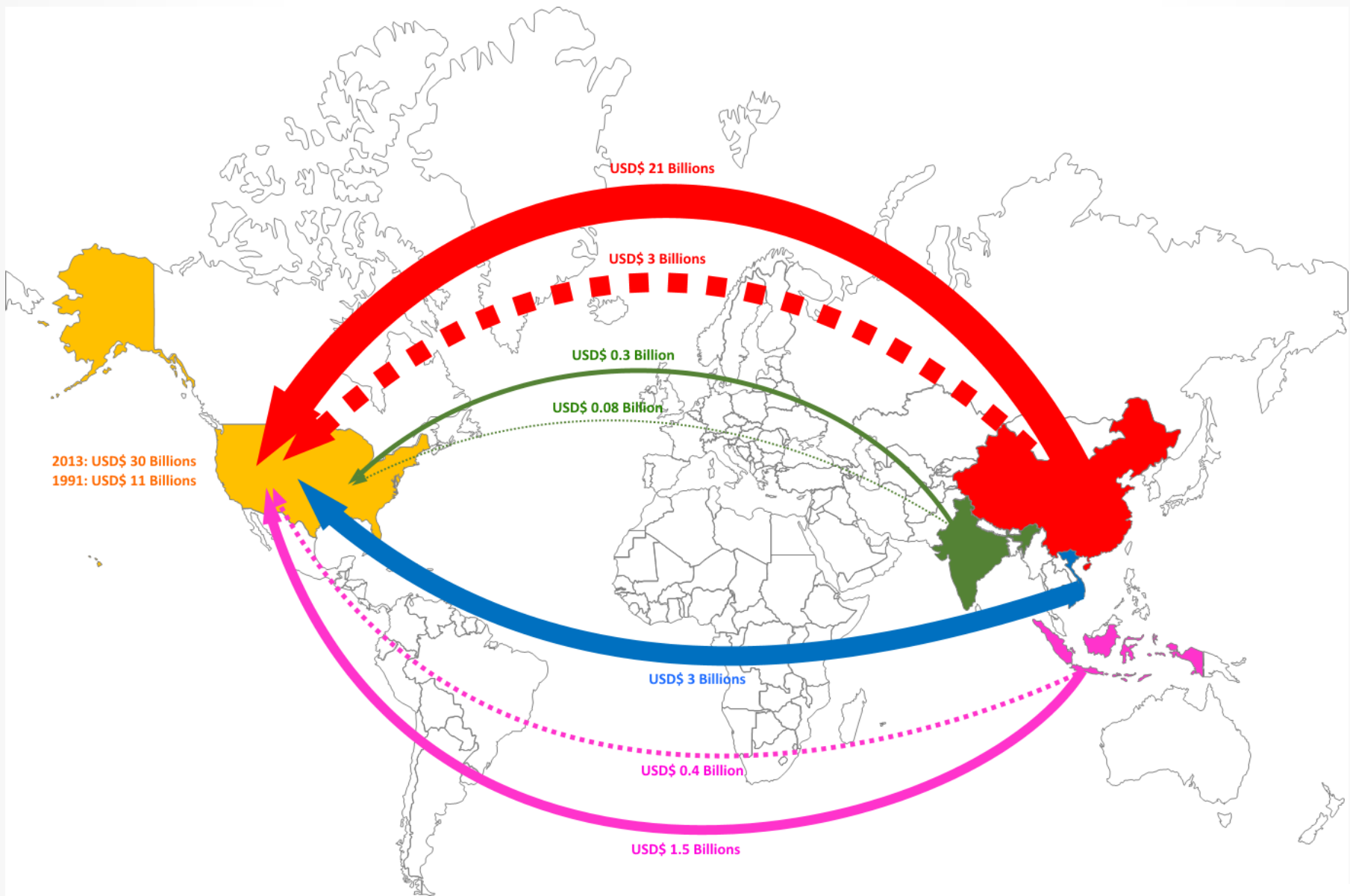
Moisture & Mold Damage Prevention

or

The Curse of the Container

Prevention is better than

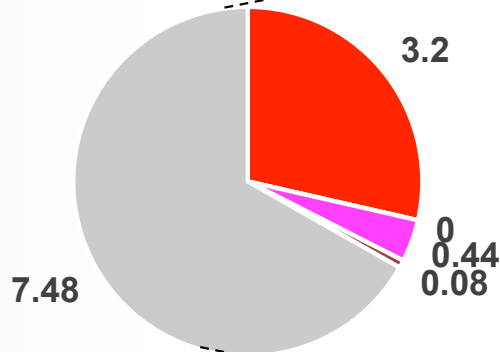




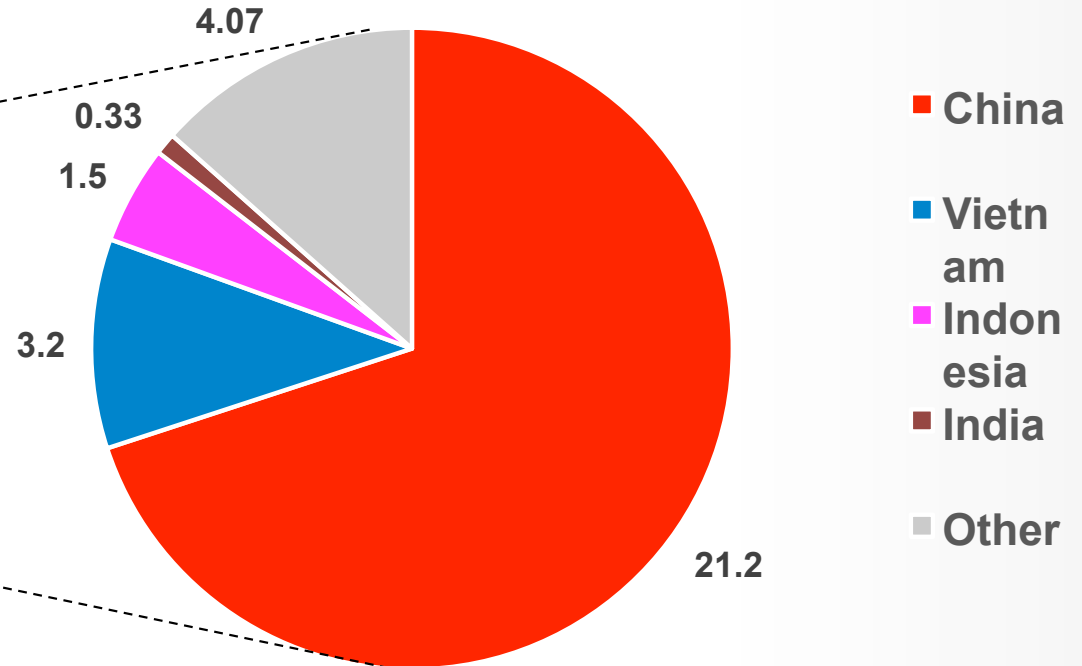
Prevention is better than

US Footwear Import Between 1991 and 2013

Footwear Import Trade Value in 1991(US\$ Billion)

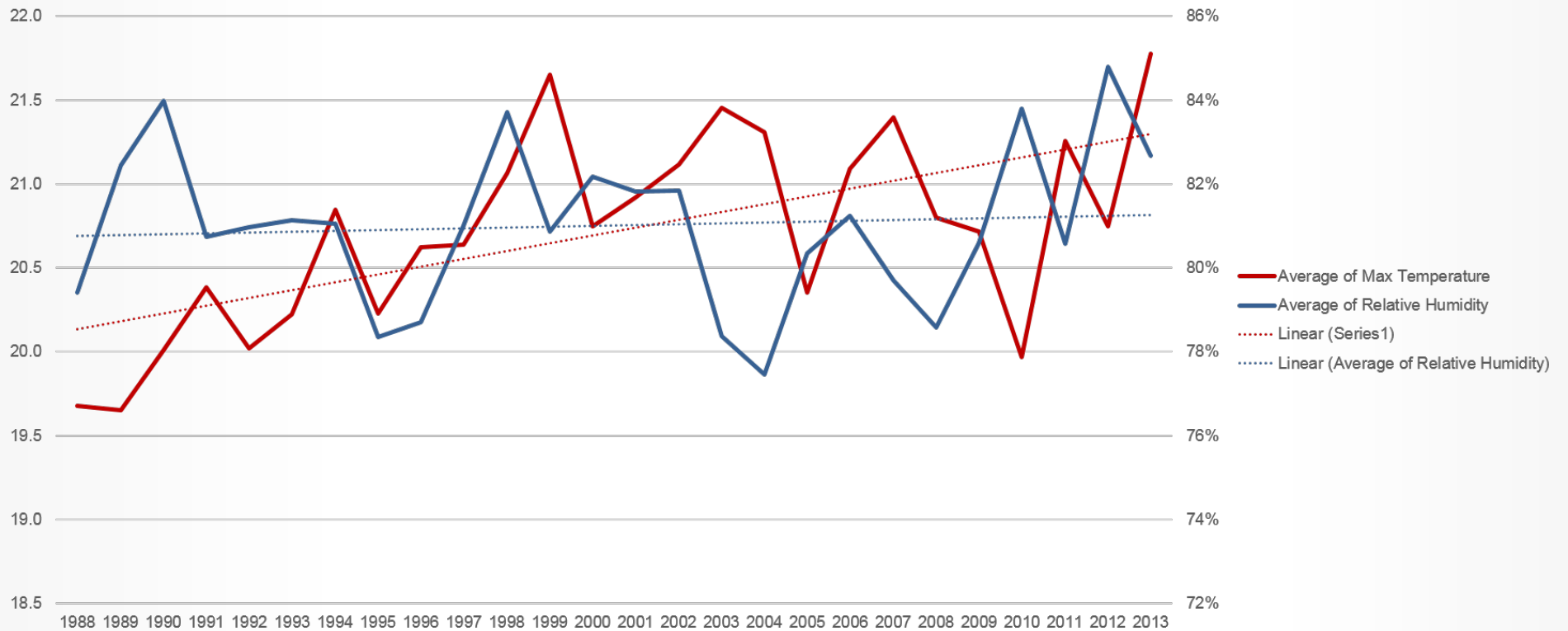


Footwear Import Trade Value in 2013(US\$ Billion)



Prevention is better than

Wenzhou's Temperature and Humidity Level Since 1988



Prevention is better than



CLIMATE DATA East Asia



Country	Export location	Long term average (26 years)			5 years average (2009 – 2014)		
		Average relative humidity level > 70%	Wet season		Average relative humidity level > 70%	Wet season	
			Average precipitation \geq 3.93in	Average monthly precipitation		Average precipitation \geq 3.93in	Average monthly precipitation
China	Hong Kong	Year round	April – October	12.20in	Year round	April - September	12.76in
	Xiamen	Year round	March – September	9.61in	Year round	May - September	9.09in
	Wenzhou	Year round	February – September	8.07in	Year round	Feb – Sept, November	8.58in
	Shanghai	Year round	March – September	6.30in	Year round	May - September	7.28in
	Qingdao	May – September	July – August	7.91in	June - September	July – August	8.43in
	Tianjin	None	July – August	4.57in	August	July – August	5.98in
	Dalian	June – August	July – August	5.79in	June – August	July – August	5.94in
	Chongqing	Year round	May – September	5.28in	Year round	April – September	6.46in
	Changchun	Dec-Feb, July-Aug	July – August	5.20in	Nov—Mar, July—Aug	July – August	5.87in
Japan	Osaka	July	March – October	5.20in	July	March – October	5.94in
	Tokyo	June – September	March – October	6.30in	June – September	February - October	6.22in
South Korea	Seoul	July – August	May – September	8.27in	April – September	June – September	9.88in
	Busan	April – September	April – September	7.05in	April - September	March - September	7.44in
Taiwan	Taipei	Year round	February – October	9.49in	Year round	April – September	10.35in
	Keelung	Year round	Year round	12.32in	Year round	Year round	11.34in
	Taichung	Year round	April – September	9.72in	Year round	April - September	10.28in
	Kaohsiung	Year round	May – September	13.07in	February - September	May - September	13.62in

Marketing Department
February 2015

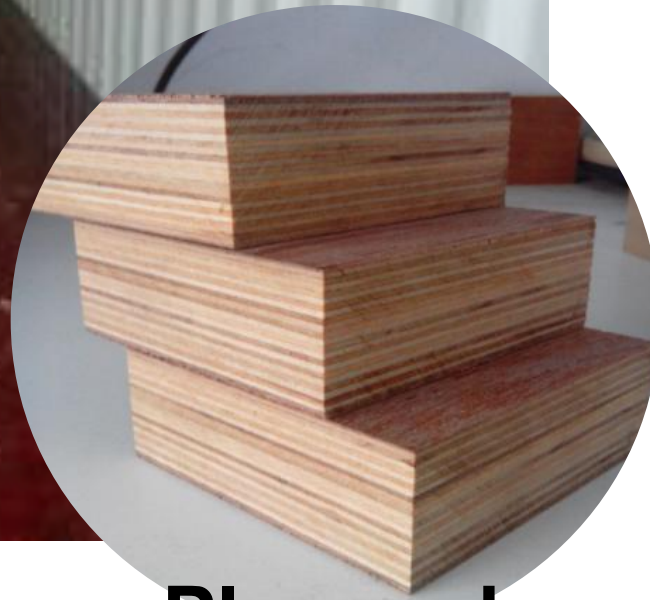
7/21/15
Prevention is better than





Prevention is better than





Plywood

40' GP

CBM: 0.78 m³

Thickness: 1.1 inch

MC (moisture content) : 12%

Density \approx 1,719lbs/ m³

Weight \approx 1445lbs.

Prevention is better than



MC

20%

Weight of floor

1,455 lbs

Water evaporation

37.47lbs/4.49 gals.

The root cause of water condensation:
Warm air can hold more moisture than cold air



Temperature		Max. Water Content	
(°C)	(°F)	(g/m ³)	(10 ⁻³ lb/ft ³)
-25	-13	0.64	0.040
-20	-4	1.05	0.066
-15	5	1.58	0.099
-10	14	2.31	0.14
-5	23	3.37	0.21
0	32	4.89	0.31
5	41	6.82	0.43
10	50	9.39	0.59
15	59	12.8	0.8
20	68	17.3	1.07
30	86	30.4	1.9
40	104	51.1	3.2
50	122	83.0	5.2
60	140	130	8.1

Example: Free Moisture Released due to Temperature Variation:

Temperature in closed Container after loading: 50C/122F

Water content in air at 95% humidity: 80grams/cbm

Temperature at sea: 10C/50F

Maximum water content: 80grams/cbm - 9.4grams/cbm

Water released in closed container per cbm = 70.6grams

70.6 grams per cbm X 55cbm = 3,886 grams of water, or

3.886 liters / 1.02 gallons

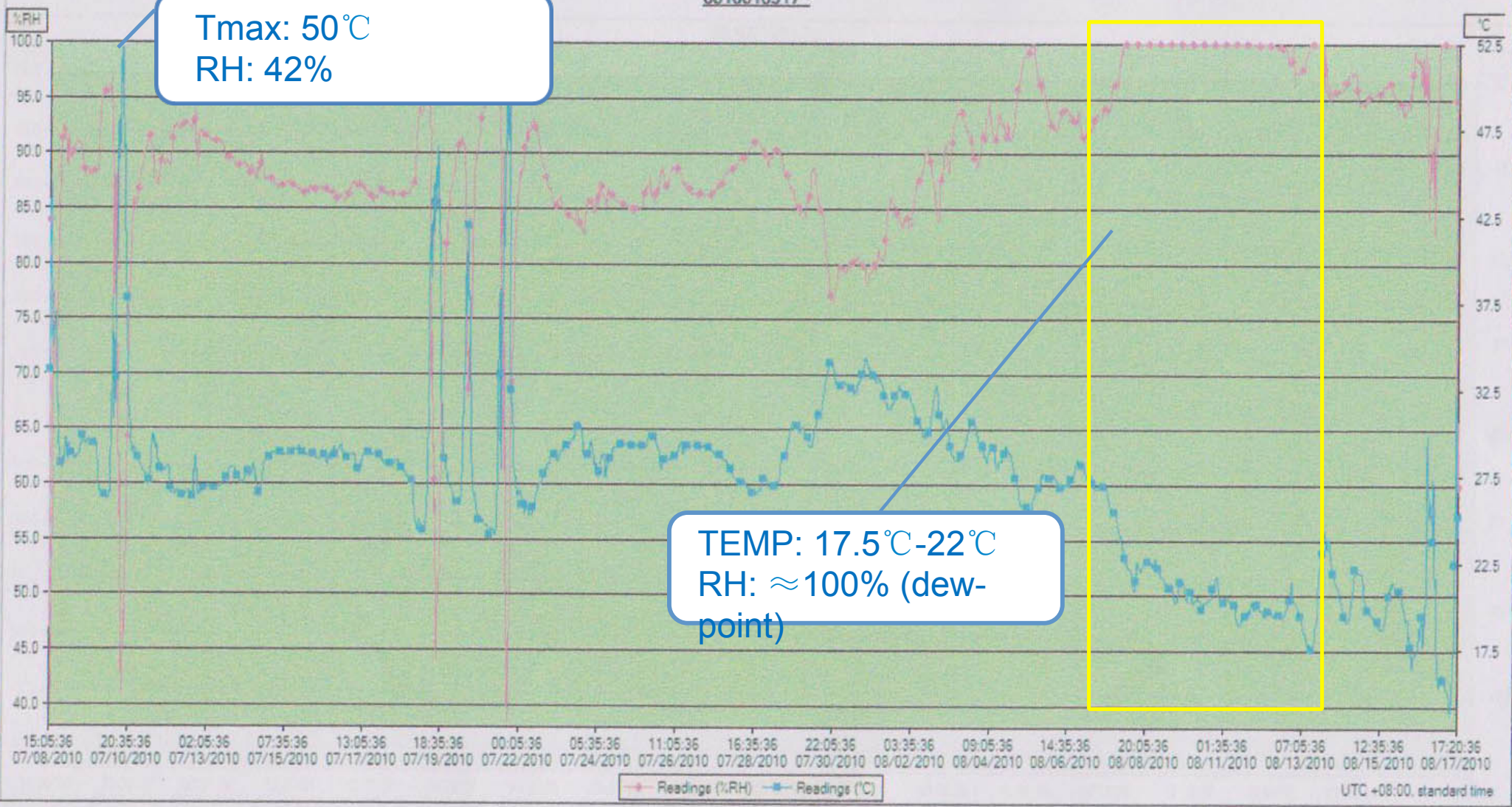
Prevention is better than



8010010917 -

Tmax: 50°C
RH: 42%

TEMP: 17.5°C-22°C
RH: ≈ 100% (dew-point)



Prevention is better than



Water condensation:

- Container Rain
- Cargo sweat



Prevention is better than

Solutions

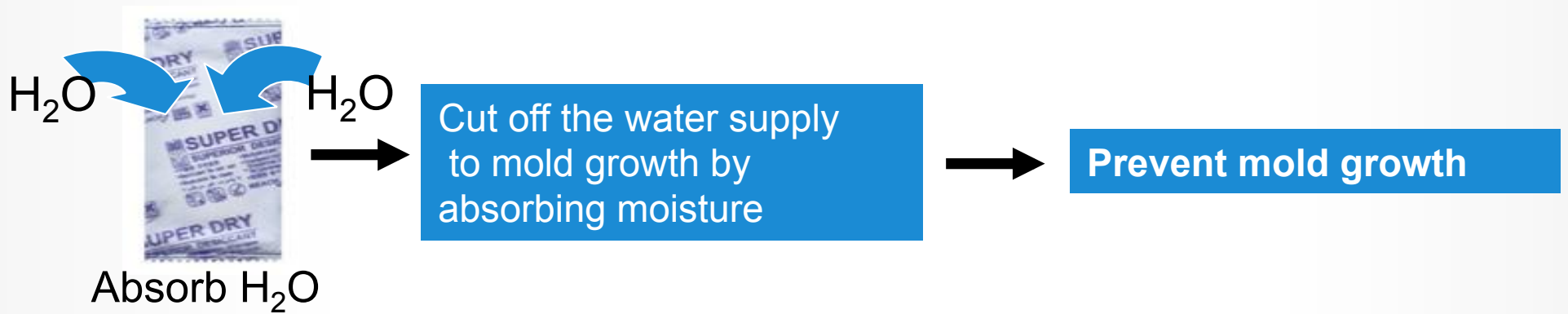
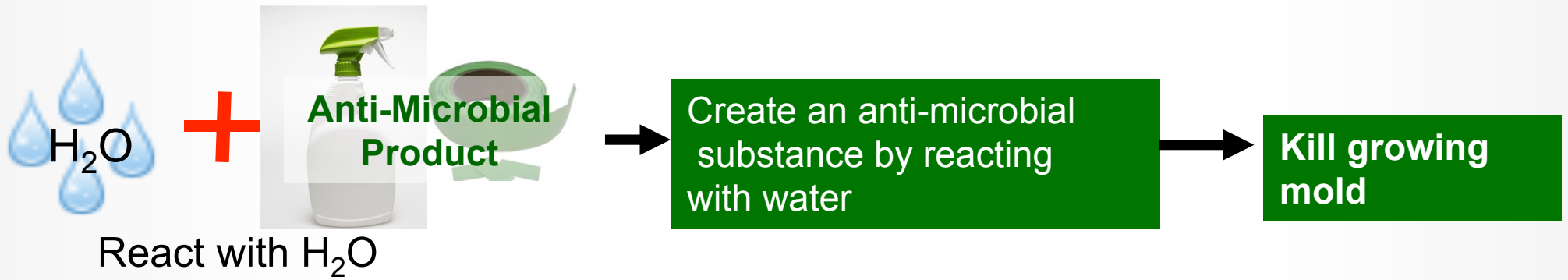
Broadly Speaking:

Two Categories of Moisture and Mold Damage Preventative Products

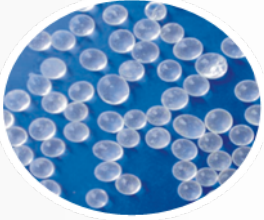
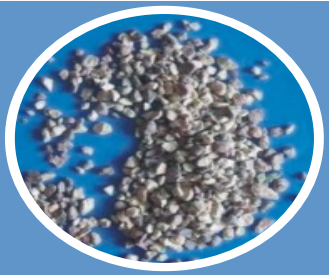
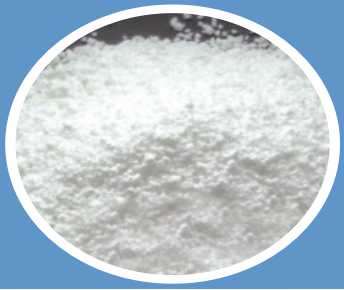
1. Anti-Microbials
2. Desiccants

Prevention is better than





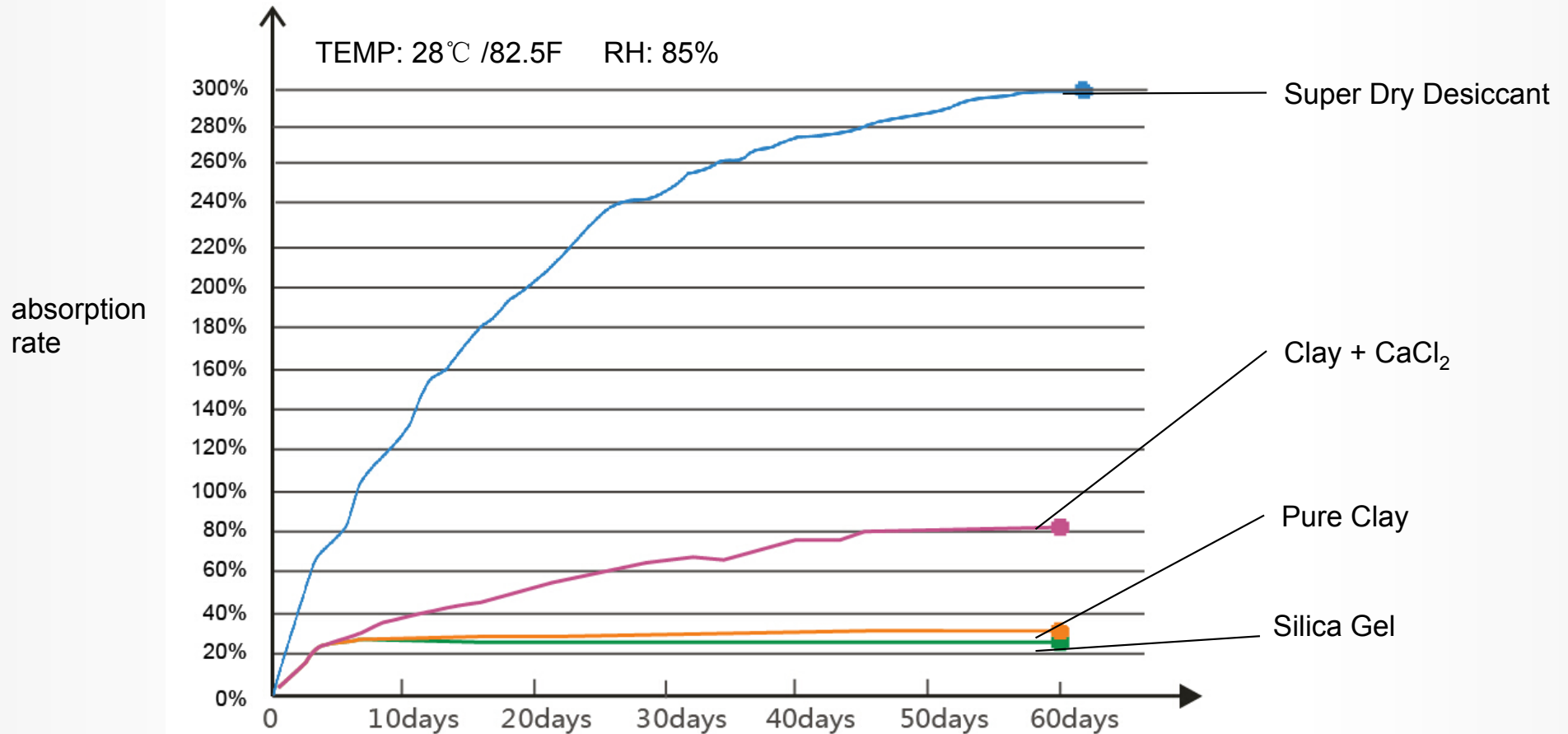
Prevention is better than

<i>Desiccant</i>	<i>Description</i>	<i>Application Temp</i>	<i>Absorption rate</i>
	<p><i>Silica gel</i> <i>Physical absorption</i> <i>Ingredient: SiO₂</i></p>	<i>Below 35°C</i>	<i>10%-27%</i>
	<p><i>Clay</i> <i>Physical absorption</i> <i>Also called</i> <i>montmorillonite/smectite</i></p>	<i>Below 50°C</i>	<i>15%-30%</i>
	<p><i>Calcium Chloride</i> <i>Chemical absorption</i> <i>-Super Dry Desiccant</i> <i>Ingredient: CaCl₂</i></p>	<i>-5°C-90°C</i>	<i>Up to 700%</i>

Prevention is better than

Desiccant Comparison

The comparison of common Desiccant's absorption abilities




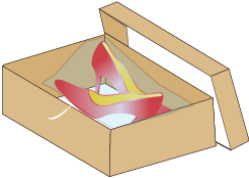


After 60 days of testing, each desiccant's absorption rate:

Super Dry Desiccant: 300%, Clay + CaCl₂: 84.6%, Pure Clay: 30.4%, Silica Gel: 26.3%

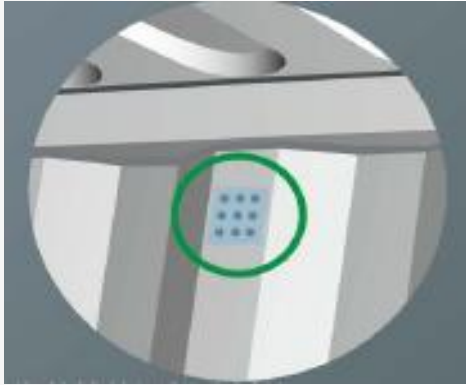
Prevention is better than



Suggested amount of desiccant

<i>Product</i>	<i>Manner of packing</i>	<i>Weight of Desiccant</i>
		2g
		5g

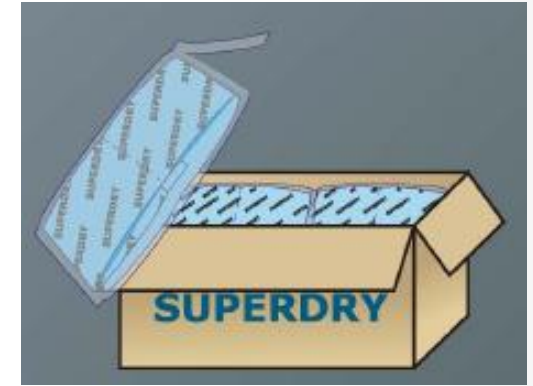
Prevention is better than



① Seal the equalization holes



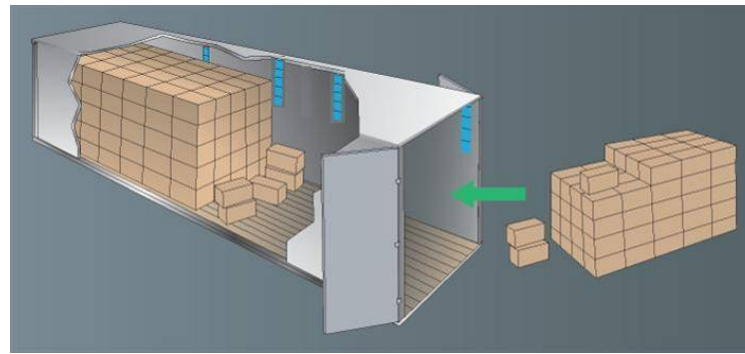
② Take the desiccant out of the carton.



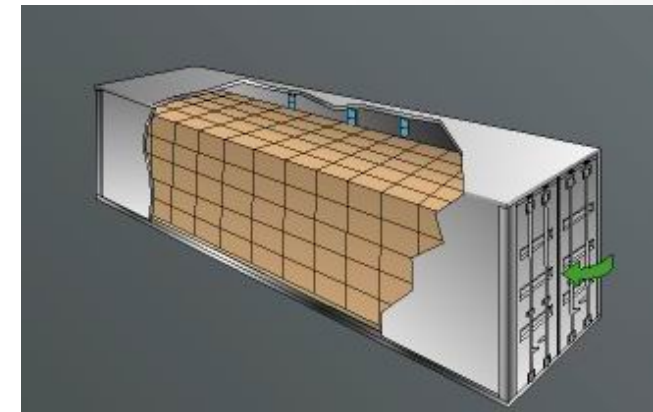
③ Open the plastic bag



④ Hang desiccants from the ceiling hooks



⑤ Keep loading time short after hanging the desiccant.



⑥ Seal the door as soon as possible.

Prevention is better than

“Back of the Envelope” Cost Evaluation

(not including time/value of money, margin loss, admin costs, etc.)

Mold Remediation Cost per pair:	Avg. \$3.00USD
Cost at average 7000pair/container	\$21,000USD
Cost, DS2 Dry Sac @ 1 per pair	.185RMB or .0298USD

Pairs protected for remediation cost of 1 container of 7000 pairs:

$\$21,000\text{USD} / .0298\text{USD}$

-or-

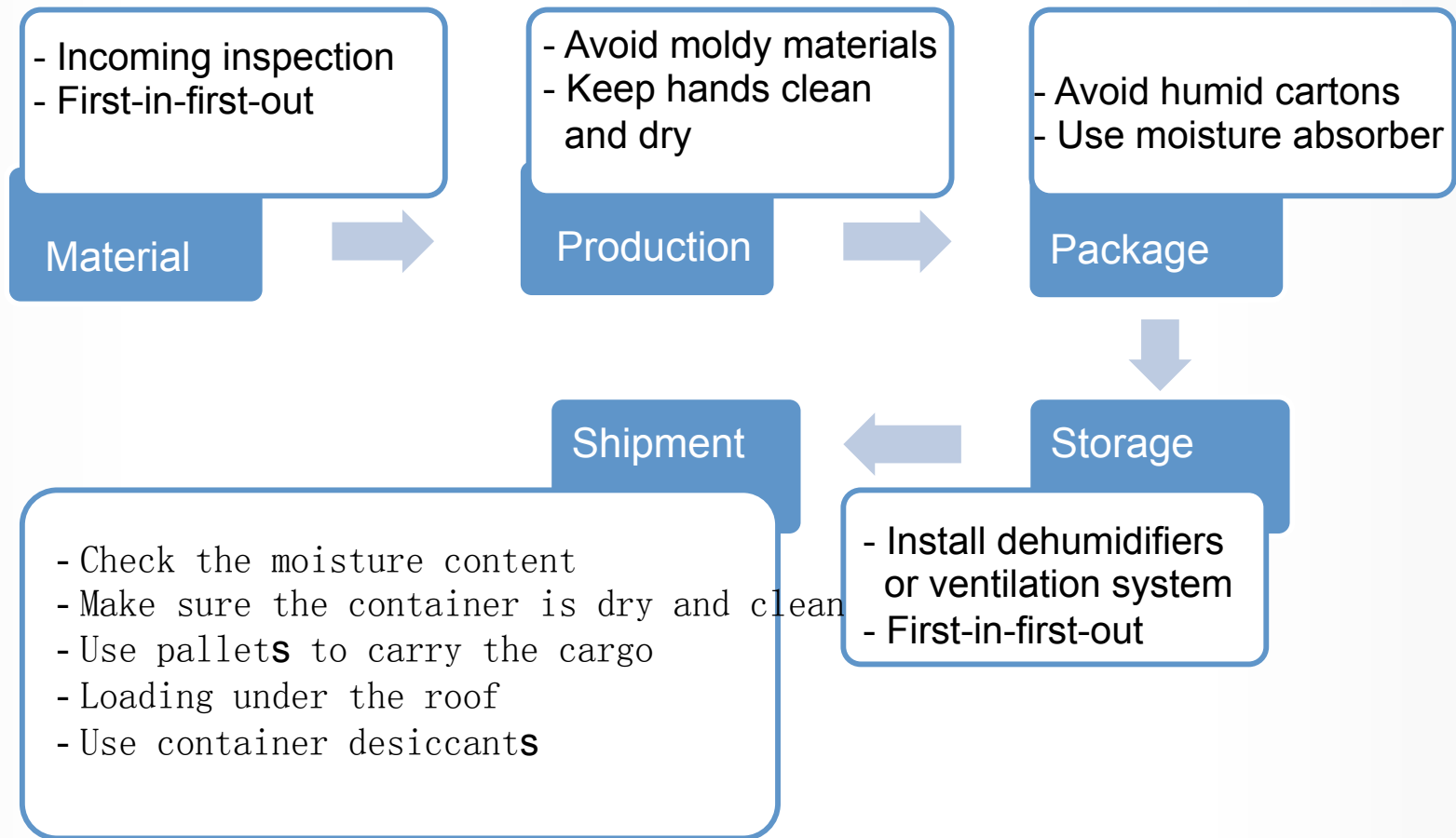
Equivalent protection for

704,678 pairs/101 containerloads

Prevention is better than



Factory Control



Prevention is better than

Thank you.

Questions?


Prevention is better than





SUMMARY

Period: 2013-8-30 to 2013-9-29 (30 days)
 Test environment: 32°C, 95%RH

Sample	With	Shoes condition																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 days
Leather shoes	DS2 sticky	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 days
Leather shoes	PLASTIC ANTI-MICROBIAL PRODUCT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 days

 Shoes no mold

 Shoes slight mold

 Shoes bad mold

Prevention is better than

