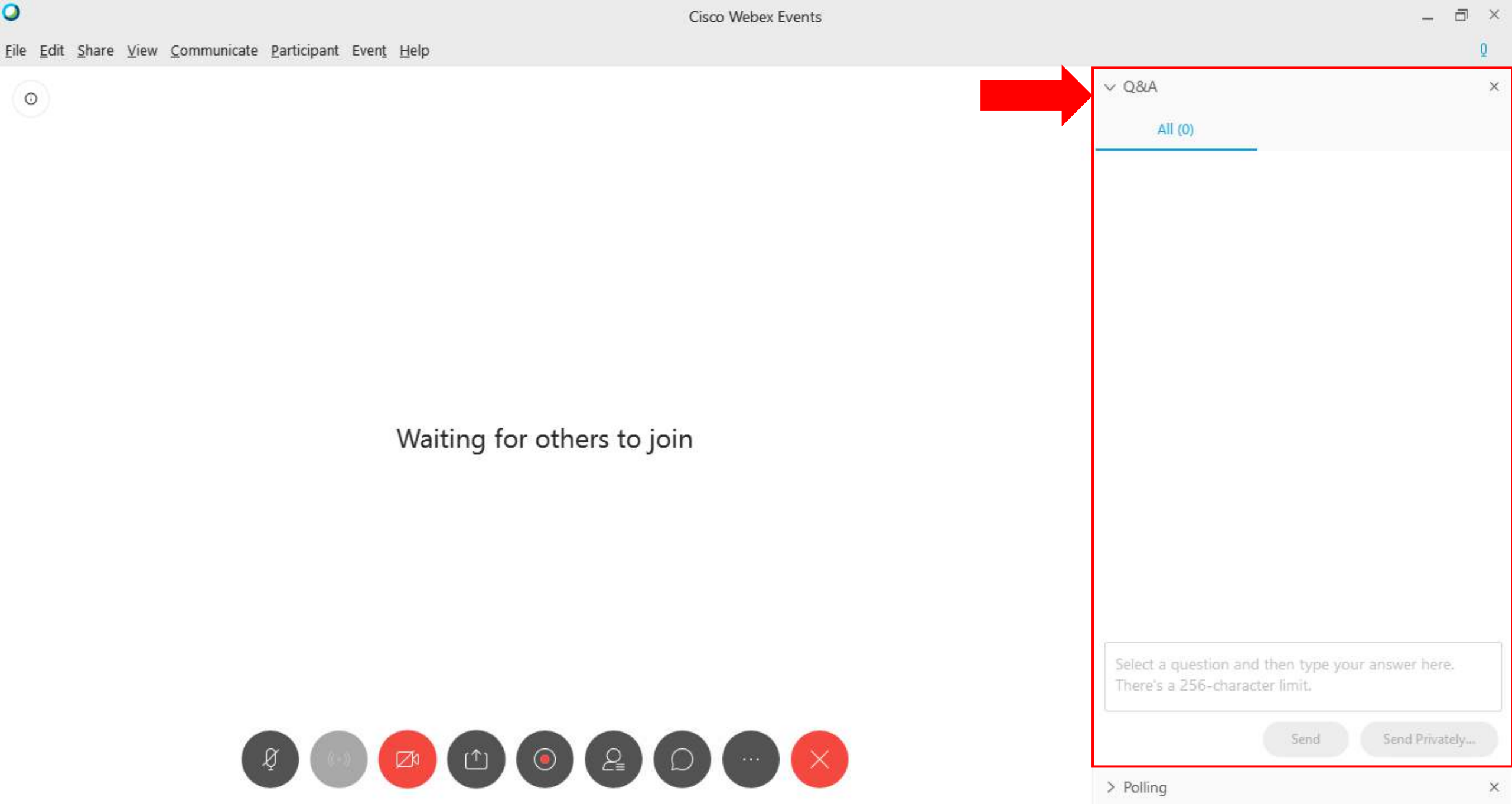
steel CONNECT

BlueScope

COMMON INFLUENCE OF PALM OIL MILL AND SMELTING PLANT ON BUILDINGS



steel CONNECT

BlueScope

COMMON INFLUENCE OF PALM OIL MILL AND SMELTING PLANT ON BUILDINGS

TROPICAL WEATHER

Source: Photo by **André Cook** from **Pexels**

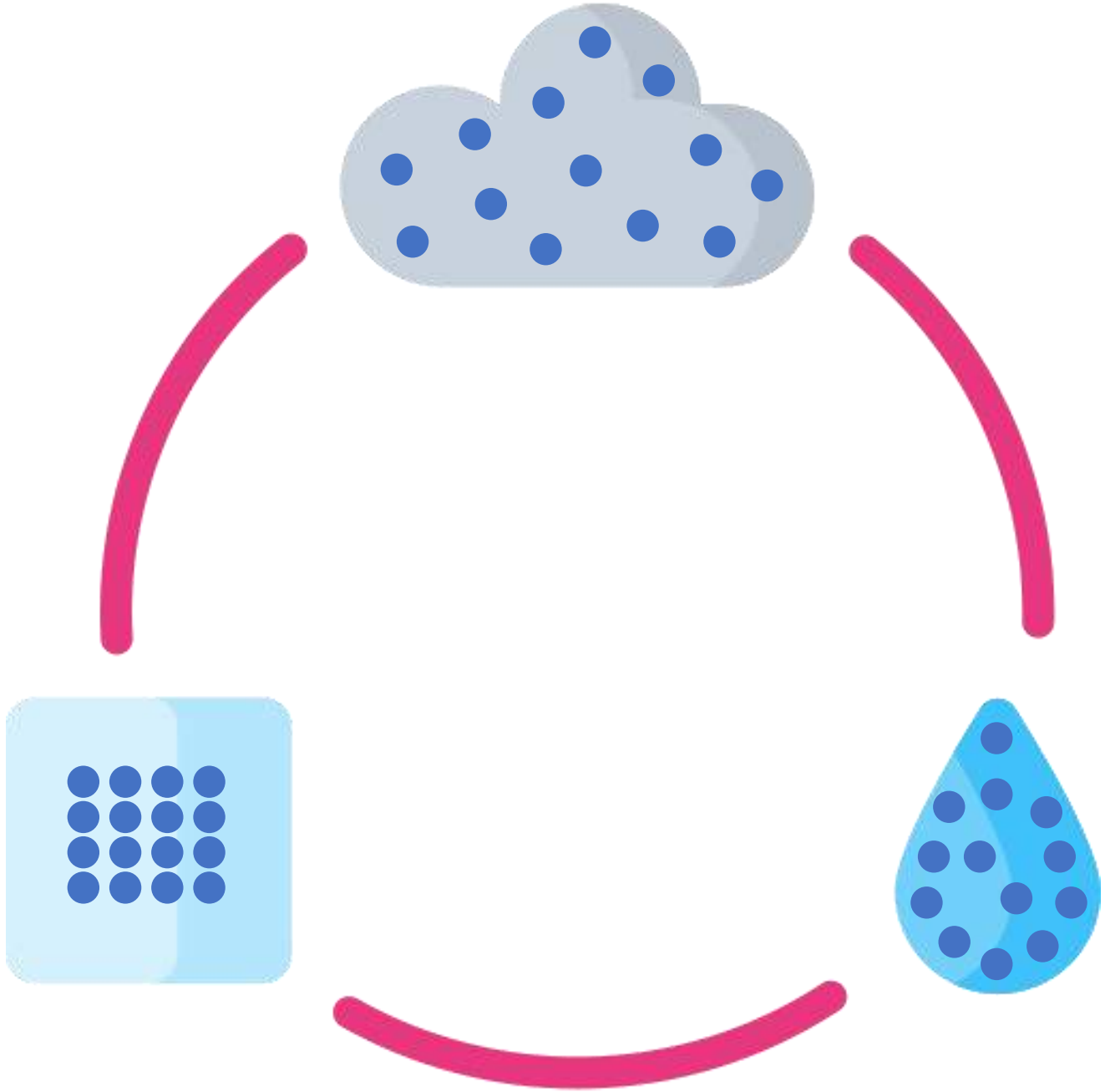
ASIDE FROM SUNNY ALL YEAR ROUND

ABUNDANCE OF RAIN

Photo by **Bibhukalyan Acharya** from **Pexels**

HIGHLY HUMID

Photo by **Alesia Kozik** from **Pexels**



UNDERSTAND DIFFERENT STATE OF WATER

Source: Icon made by Freepik from www.flaticon.com

SOLID – ICE

Photo by **Simon Berger** from **Pexels**

WATER CONDENSES OR ICE MELTS – LIQUID

GAS – STEAM

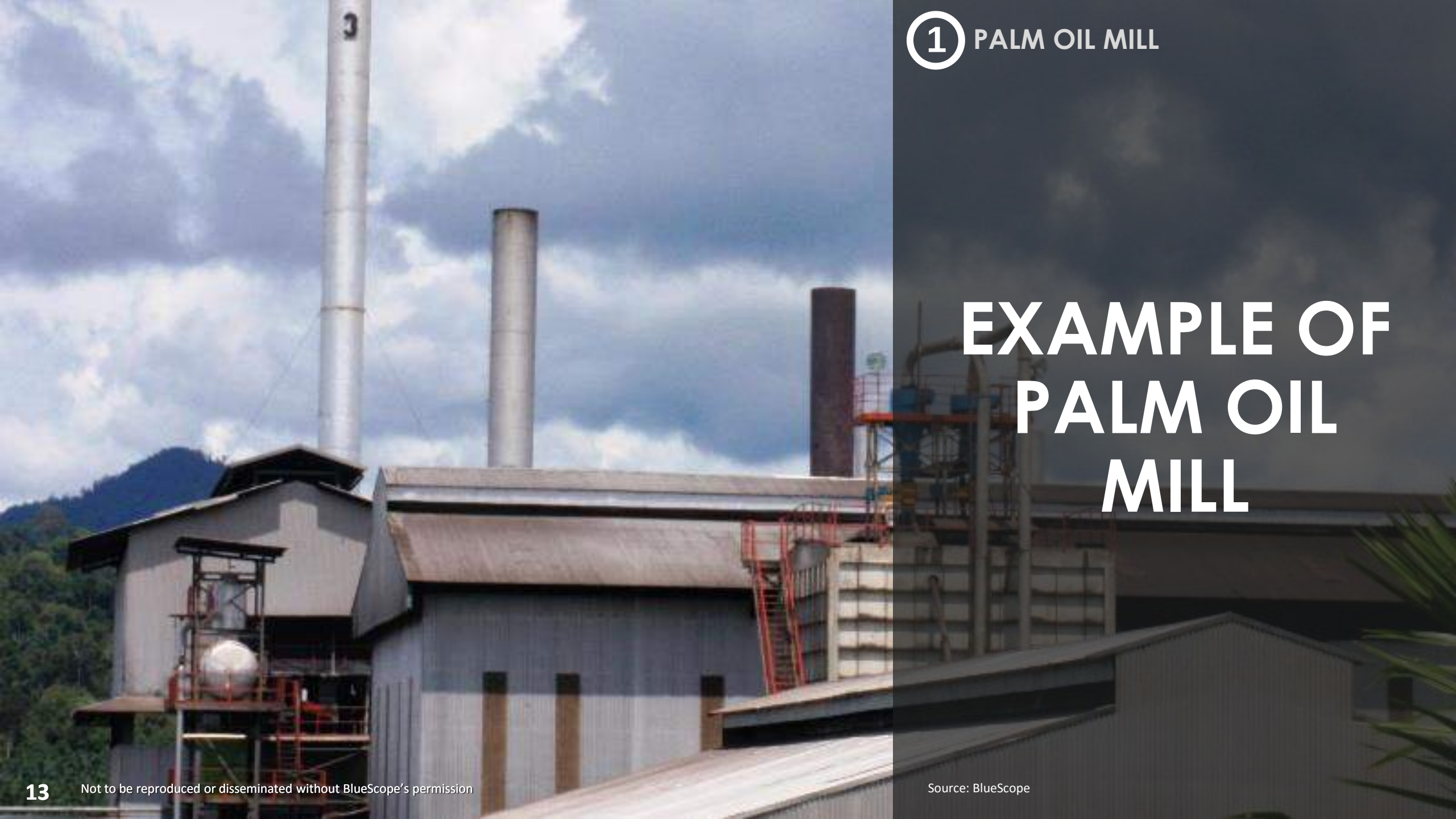
Photo by **Artem Mizyuk** from **Pexels**

1

PALM OIL MILLS

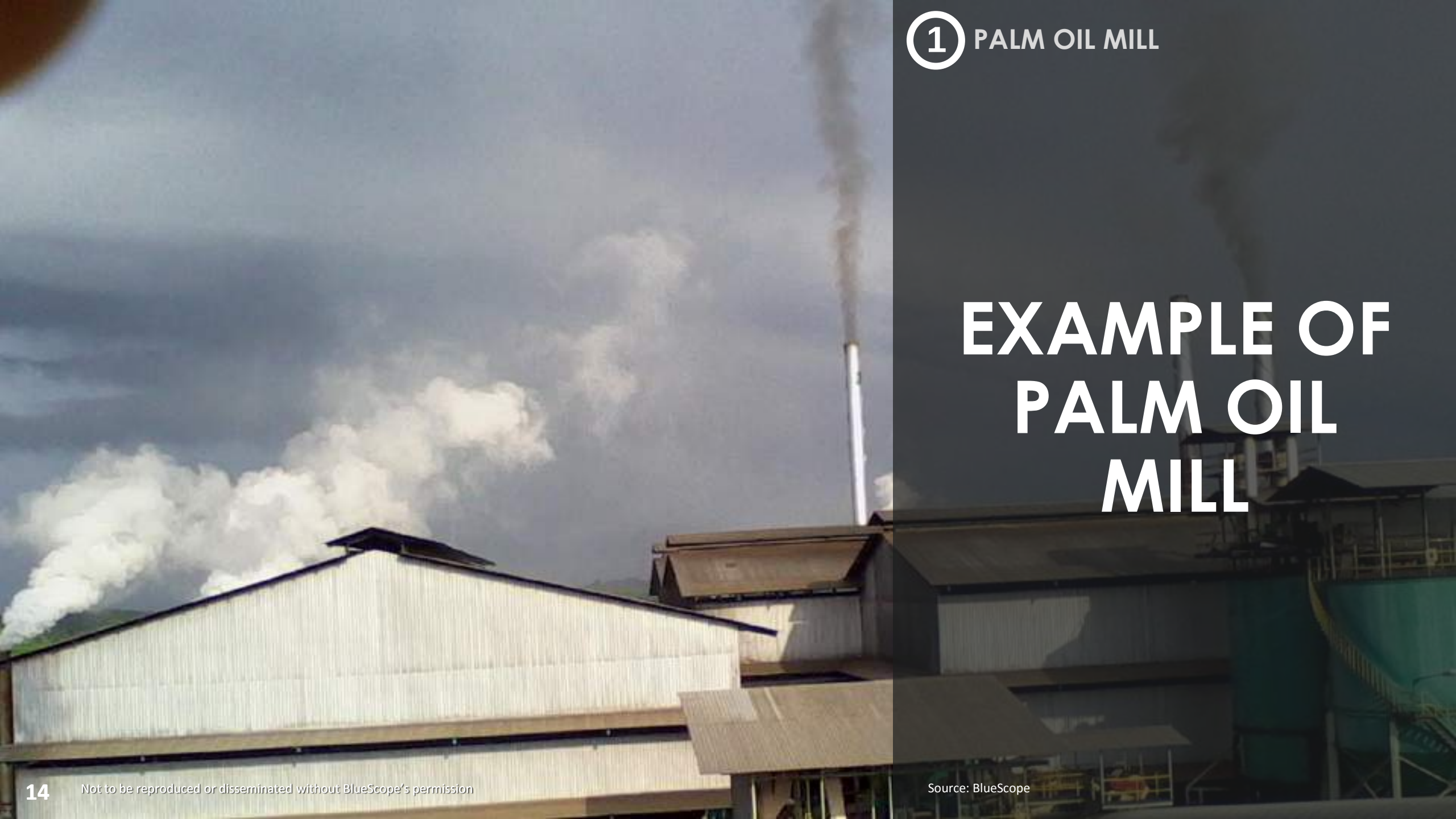
Source: https://www.foodnavigator-asia.com/Article/2012/05/25/Malaysia-s-palm-oil-market-is-mature-but-Indonesia-holds-growth-potential-Rabobank

EXAMPLE OF PALM OIL MILL



Source: BlueScope

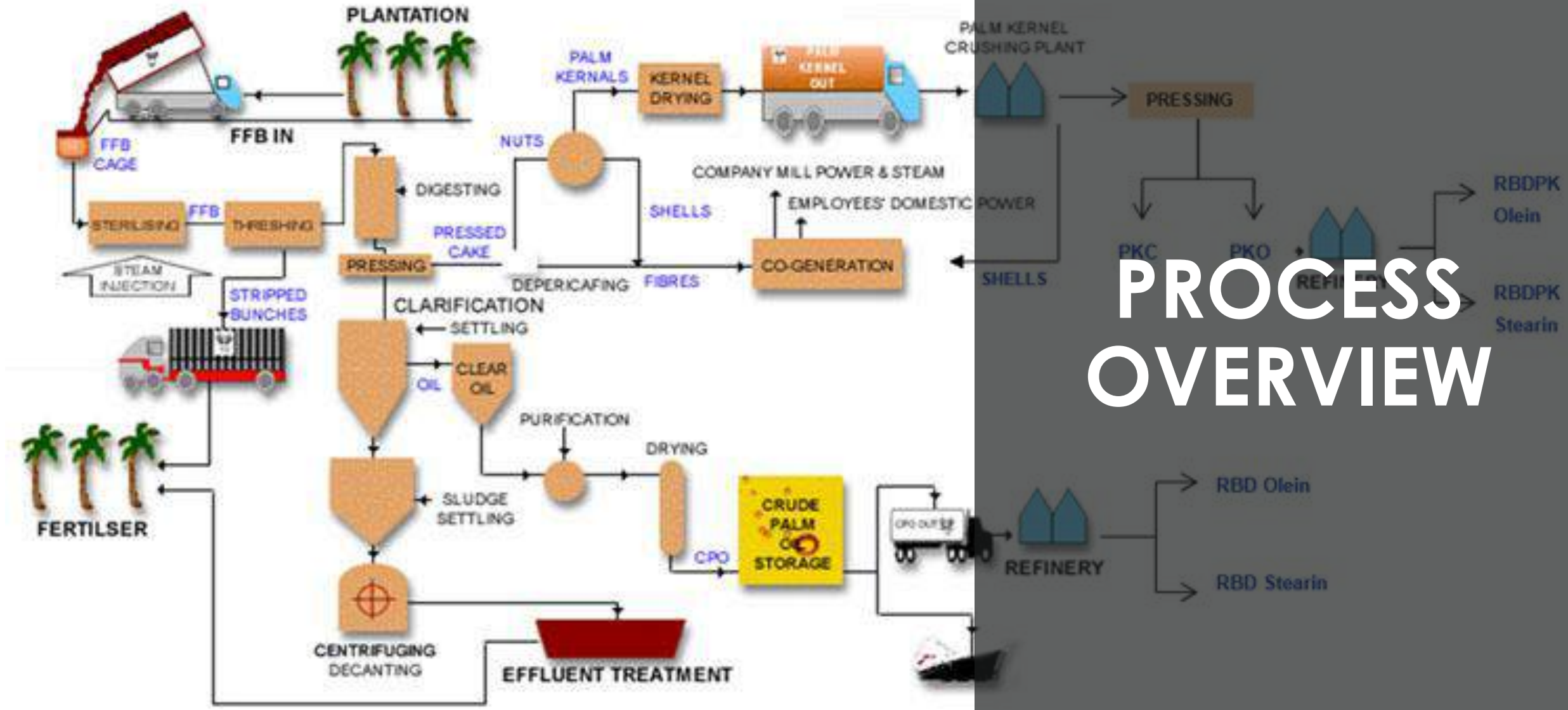
EXAMPLE OF PALM OIL MILL



Source: BlueScope

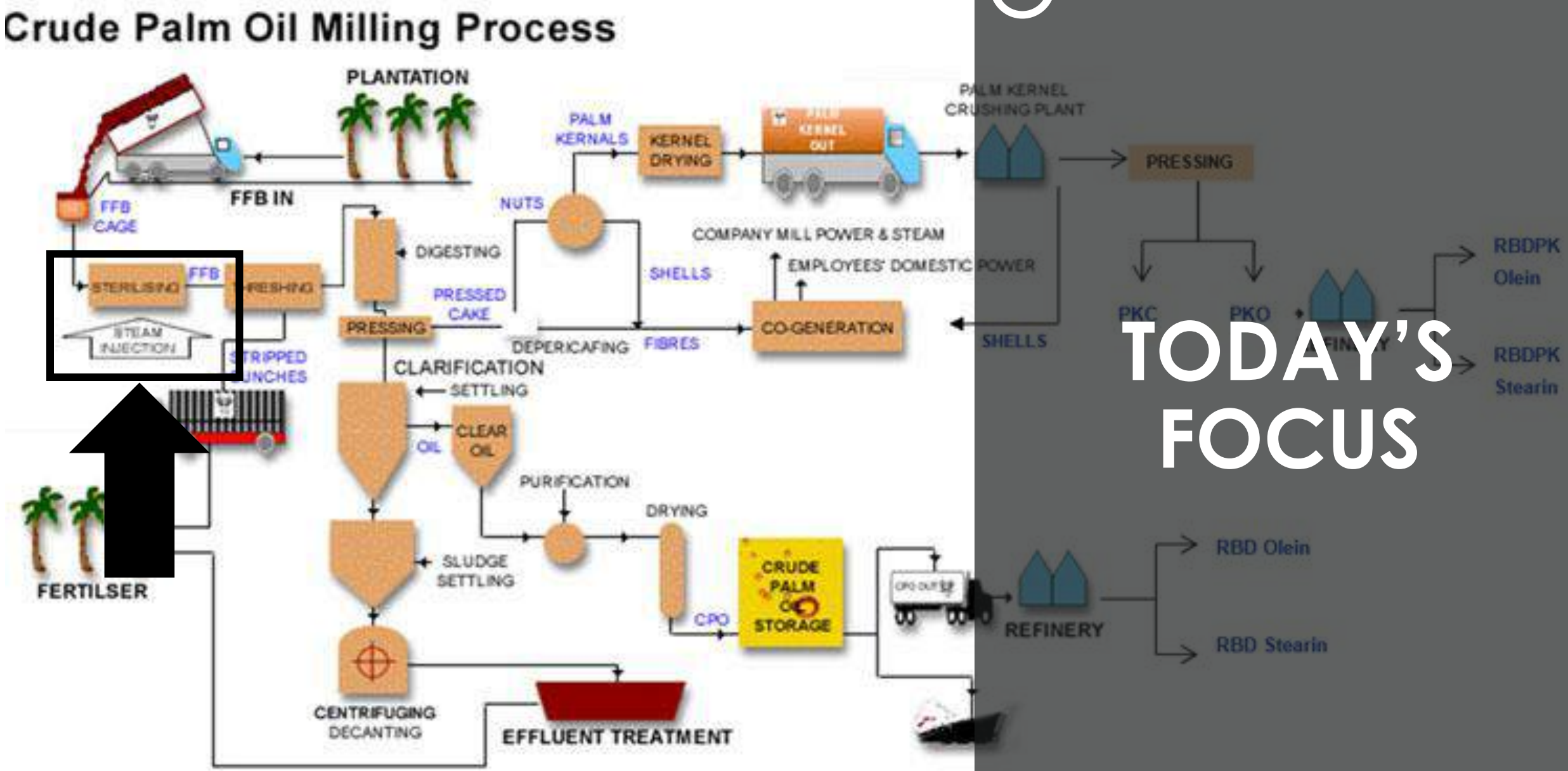
1 PALM OIL MILL

PROCESS OVERVIEW



Source: https://www.palmoilextractionmachine.com/FAQ/palm_oil_mill_process_flow_diagram_742.html

1 PALM OIL MILL



TODAY'S FOCUS

Source: https://www.palmoilextractionmachine.com/FAQ/palm_oil_mill_process_flow_diagram_742.html

1 PALM OIL MILL

USES A LOT OF STEAM

Source: BlueScope

1 PALM OIL MILL

BOILING KETTLE

Source: https://www.newscientist.com/lastword/mg24632861-900-does-a-kettle-boil-quicker-if-you-shake-it/

1 PALM OIL MILL

STEAM RELEASED FROM PRESSURE COOKER

Source: http://pressurecookerpassion.com/pressure-cooker-work/

1 PALM OIL MILL

OPENING THE LID

Photo by **cottonbro** from **Pexels**

HOT STEAM CONDENSES ONTO COLDER SURFACES

Source: https://parenting.firstcry.com/articles/incredible-benefits-of-drinking-hot-water-for-your-overall-health/

1 PALM OIL MILL

BOILER IS USED TO GENERATE STEAM

Source:
https://www.palmoilextractionmachine.com/product/palm_oil_press_machine/sterilizer_for_palm_oil_mill_311.html

STEAM IS RELEASED TO REGULATE THE PRESSURE

Source: BlueScope

FRESH FRUIT BUNCHES (FFB)

Source: BlueScope

STERILIZATION PROCESS

Source: https://www.palmoilmills.org/products/palm-oil-mill-plant/palm-bunch-sterilization-station.html

1 PALM OIL MILL

FFB IS COOKED AT >100°C

Source:
https://www.palmoilextractionmachine.com/product/palm_oil_press_machine/sterilizer_for_palm_oil_mill_311.html

1 PALM OIL MILL

HIGH PRESSURE STEAM COOKS THE FFB

Source: http://www.besteelberhad.com/steriliser/

FFB TAKEN OUT ONCE COOKED

Source: BlueScope

1 PALM OIL MILL

MORE STEAM RELEASED WHEN THE CHAMBER IS OPENED

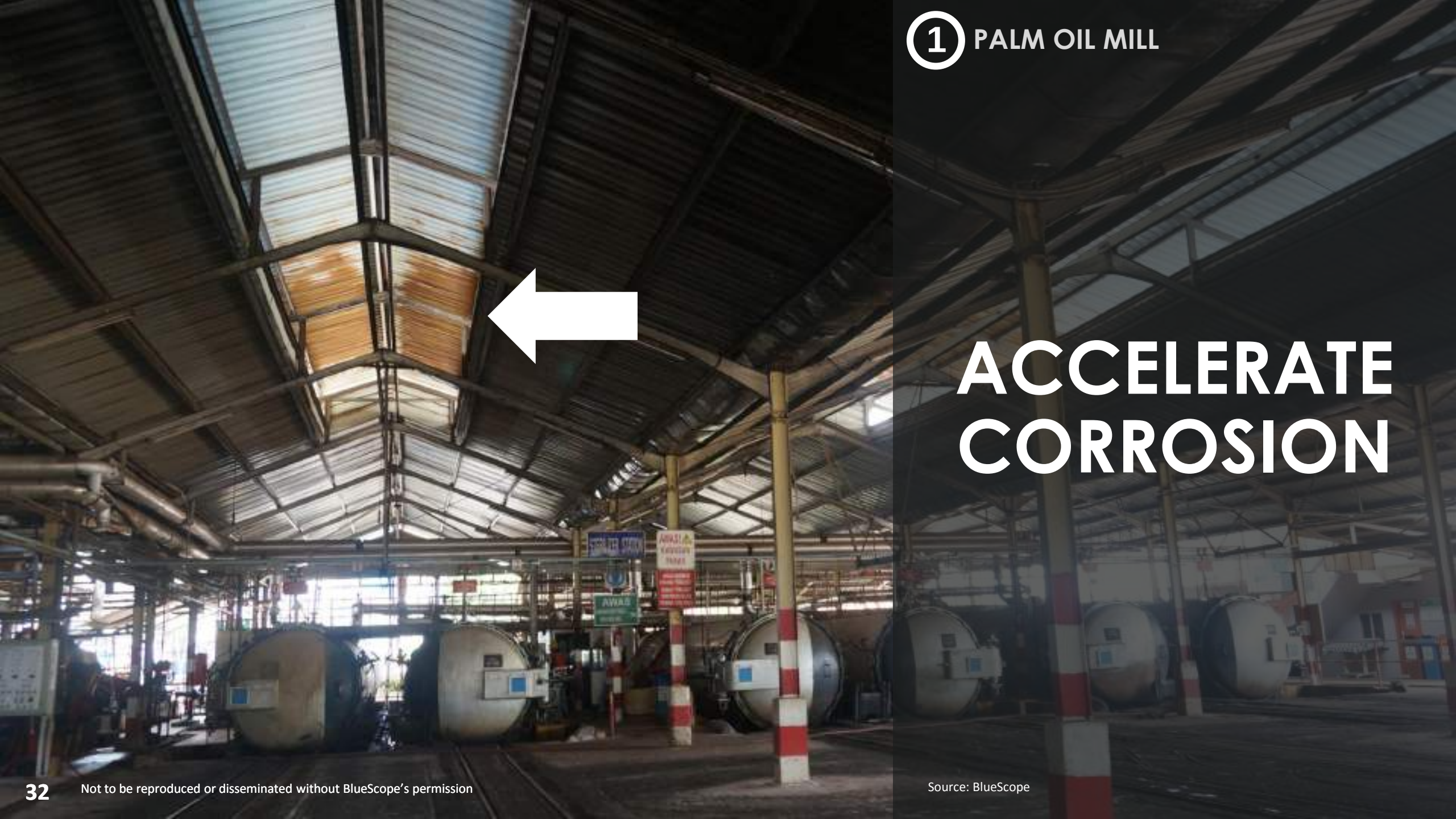
Source: BlueScope

SIGN OF WATER DROPLETS

Source: BlueScope

SIGN OF HEAVY OXIDATION

Source: BlueScope



1 PALM OIL MILL

ACCELERATE CORROSION

Source: BlueScope

1 PALM OIL MILL

CORRODE UNTIL PERFORATE

Source: BlueScope

1 PALM OIL MILL

STRUCTURAL FAILURE AS INTERNAL ENVIRONMENT TOO HUMID

Source: BlueScope

1 PALM OIL MILL

PREVENT STEAM FROM RELEASING INTERNALLY

Source: BlueScope

1 PALM OIL MILL

STEAM NEEDS TO BE RELEASED AWAY FROM THE BUILDING

Source: BlueScope

1 PALM OIL MILL

STEAM NEEDS TO BE RELEASED AWAY FROM THE BUILDING

Source: BlueScope

② SMELTING PLANT

2 SMELTING PLANT

MELTING METAL AT HIGH TEMPERATURE

2 SMELTING PLANT

INTERNAL ENVIRONMENT IS EXTREMELY HOT AND HUMID

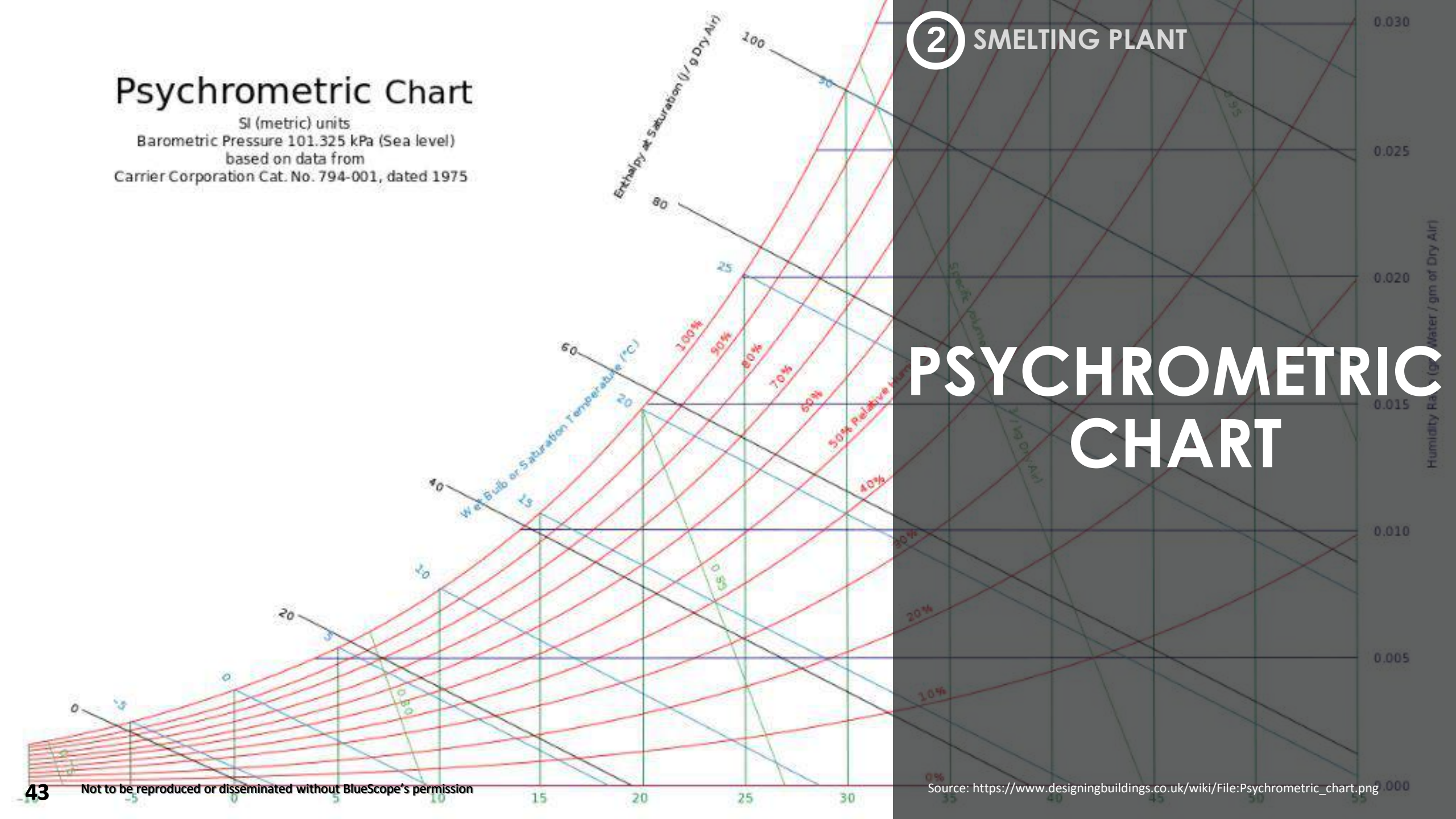
Source: https://www.bizjournals.com/birmingham/news/2015/07/29/u-s-steel-to-idle-blast-furnace-at-fairfield-works.html

2 SMELTING PLANT

VERY HIGH SAFETY RISKS

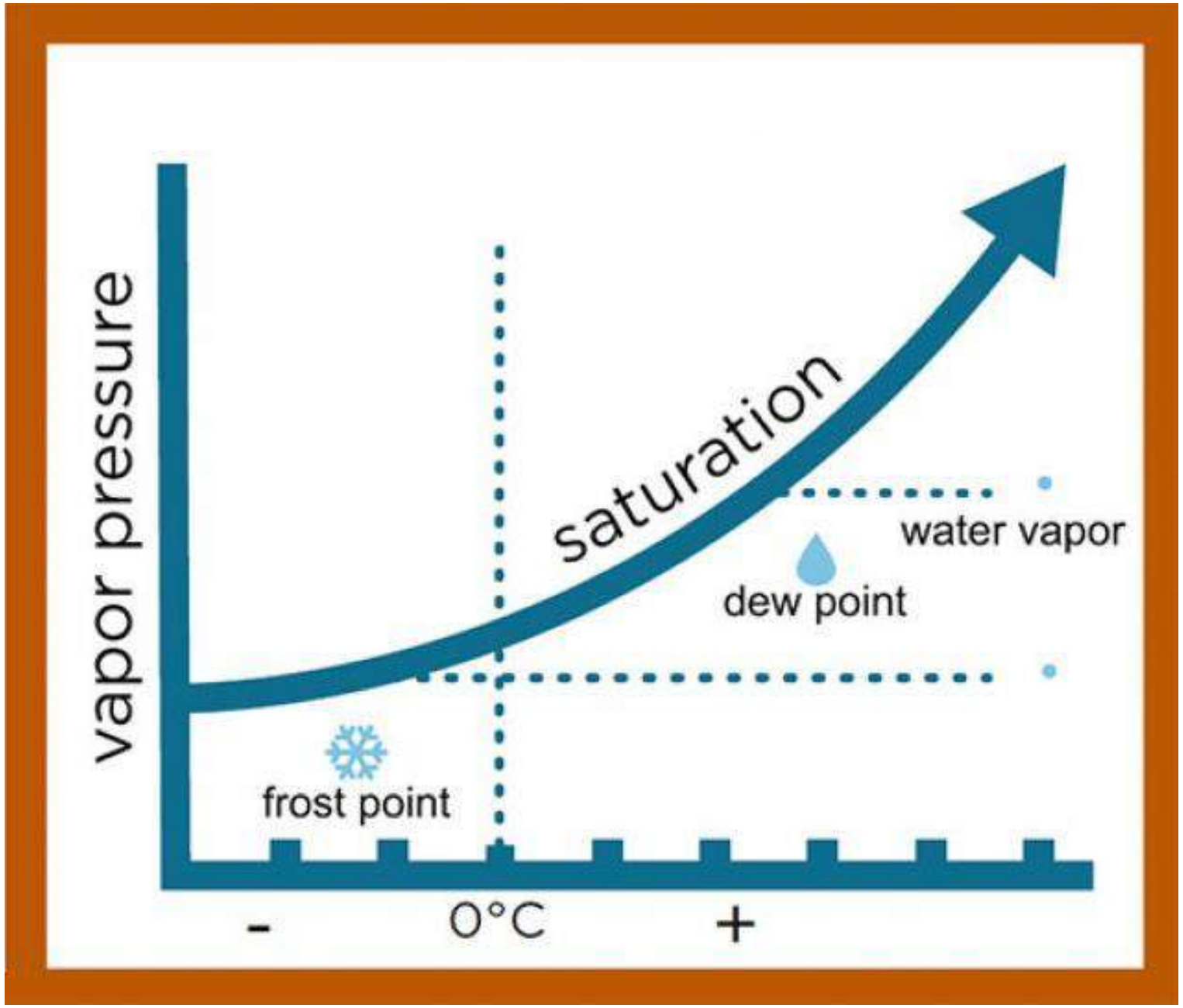
Source: https://www.steel-360.com/stories/steel/electric-arc-furnace-clean-steel-environment

WATER CONDENSES – LIQUID

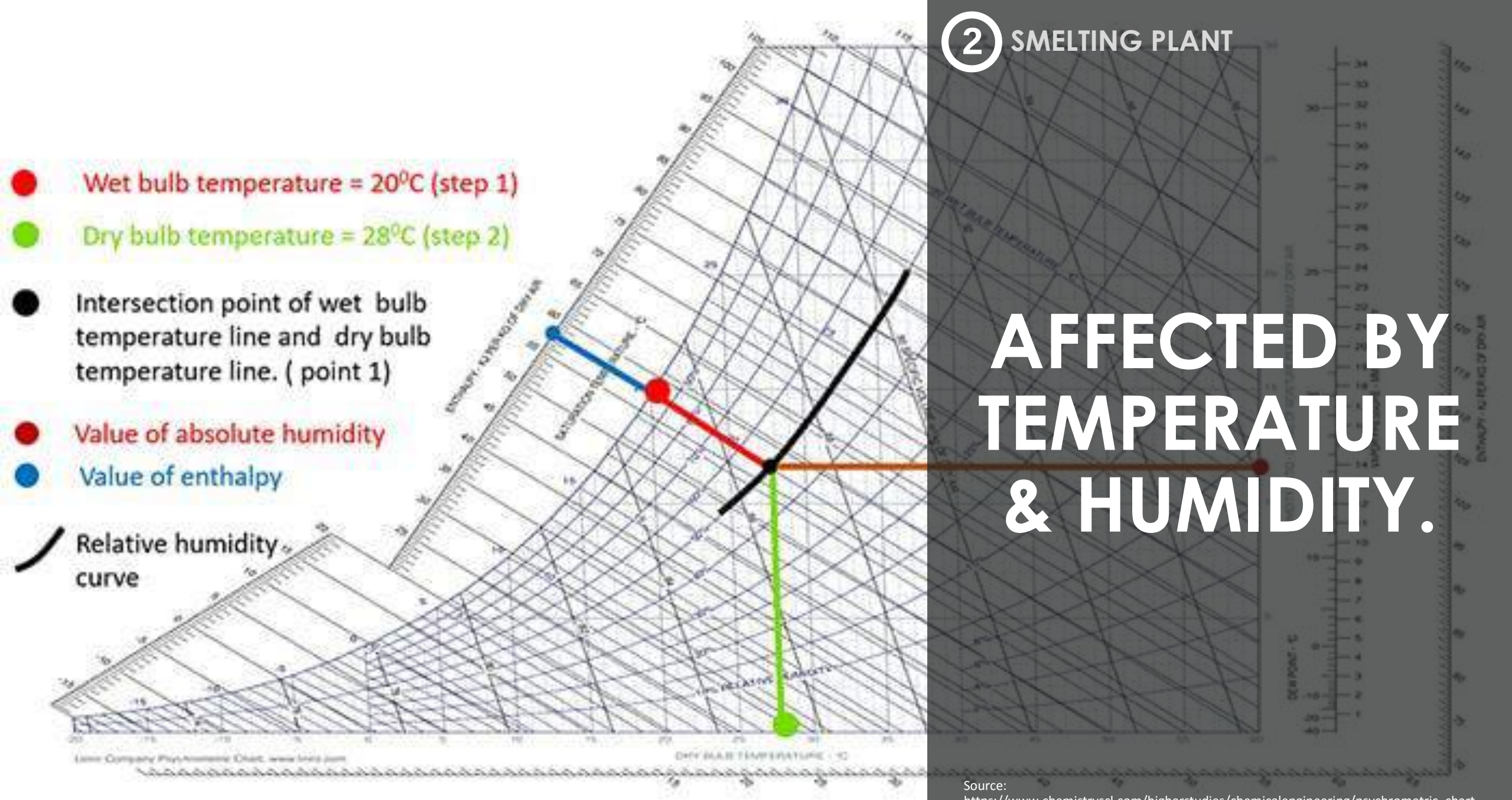


PSYCHROMETRIC CHART

Source: https://www.designingbuildings.co.uk/wiki/File:Psychrometric_chart.png



UNDERSTAND WHAT IS DEW POINT



AFFECTED BY TEMPERATURE & HUMIDITY.

Source: https://www.chemistryscl.com/higherstudies/chemicalengineering/psychrometric_chart/main.html

DEW POINT CHART

RELATIVE HUMIDITY (%)

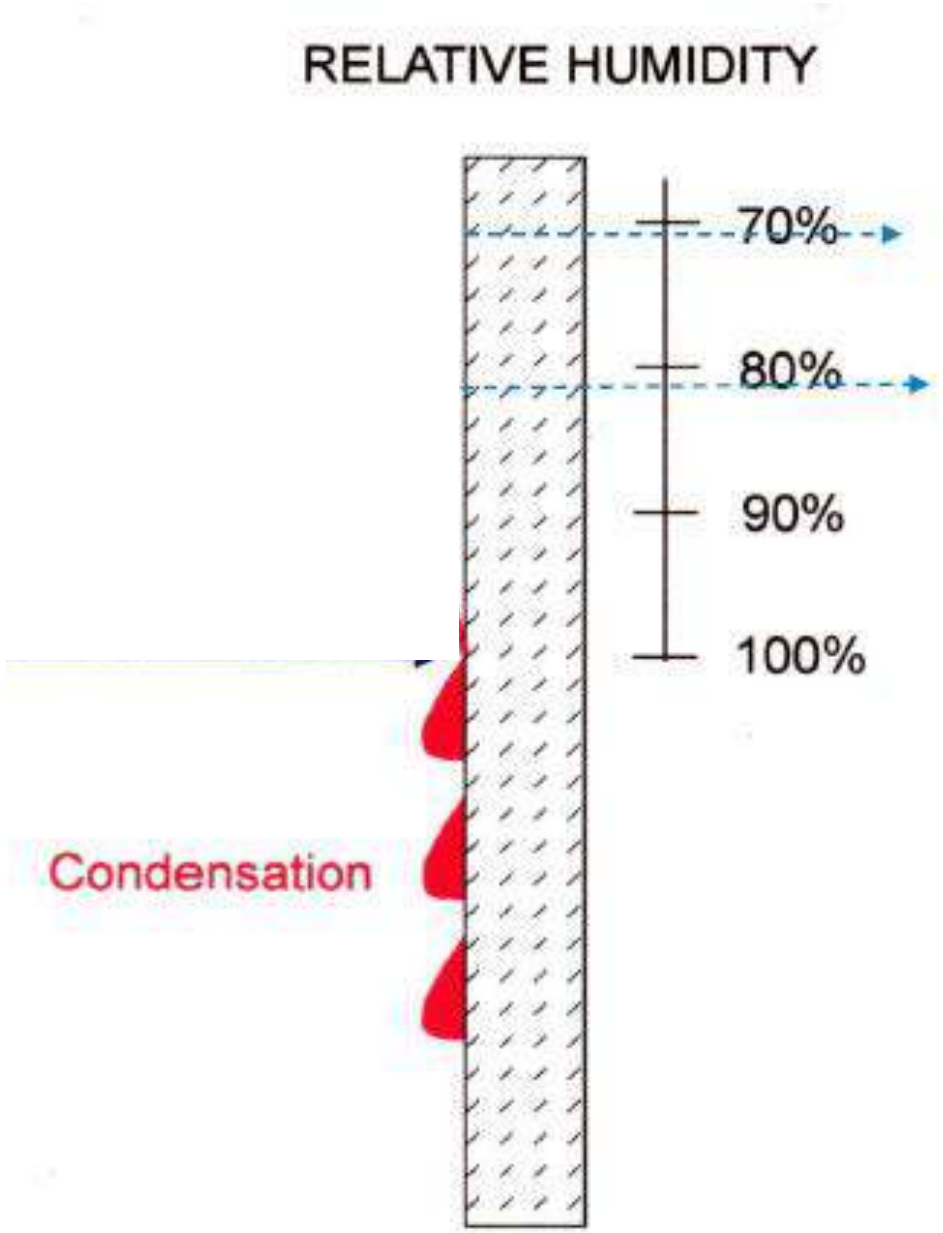
TEMP. (°C)

Temperature, Relative Humidity and Dew Point

Relative Humidity %

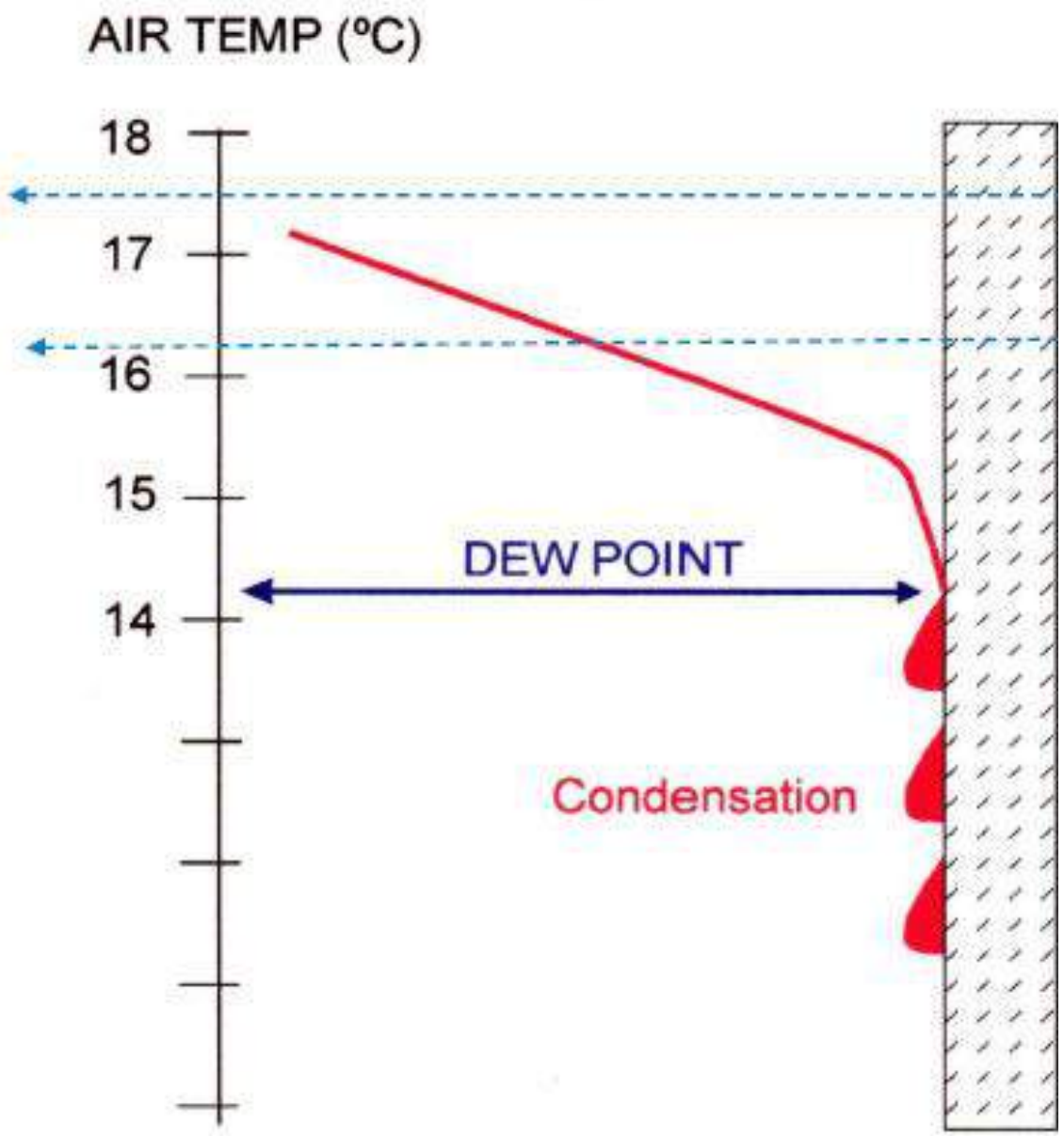
Temp °C	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Temp °C
46	-2.62	7.11	13.18	17.67	21.26	24.27	26.87	29.16	31.22	33.08	34.79	36.36	37.83	39.2	40.49	41.71	42.86	43.96	45	46	46
45	-3.32	6.36	12.4	16.86	20.43	23.42	26	28.27	30.31	32.17	33.86	35.43	36.89	38.25	39.53	40.74	41.88	42.97	44.01	45	45
44	-4.01	5.61	11.61	16.04	19.59	22.56	25.13	27.39	29.41	31.25	32.94	34.5	35.94	37.3	38.57	39.77	40.91	41.99	43.02	44	44
43	-4.7	4.86	10.82	15.23	18.75	21.7	24.25	26.5	28.51	30.34	32.01	33.56	35	36.34	37.61	38.8	39.93	41	42.02	43	43
42	-5.4	4.11	10.03	14.41	17.91	20.85	23.38	25.61	27.61	29.43	31.09	32.62	34.05	35.39	36.64	37.83	38.95	40.01	41.03	42	42
41	-6.09	3.36	9.25	13.6	17.08	19.99	22.5	24.72	26.71	28.51	30.16	31.69	33.11	34.43	35.68	36.86	37.97	39.03	40.04	41	41
40	-6.79	2.61	8.46	12.78	16.24	19.13	21.63	23.83	25.81	27.6	29.24	30.75	32.16	33.48	34.72	35.89	36.99	38.04	39.04	40	40
39	-7.49	1.85	7.67	11.96	15.4	18.27	20.76	22.98	24.91	26.68	28.31	29.82	31.22	32.53	33.75	34.91	36.01	37.06	38.05	39	39
38	-8.19	1.1	6.88	11.15	14.56	17.42	19.88	22.05	24	25.77	27.39	28.88	30.27	31.57	32.79	33.94	35.03	36.07	37.06	38	38
37	-8.88	0.34	6.09	10.33	13.72	16.56	19.01	21.17	23.1	24.85	26.46	27.95	29.33	30.62	31.83	32.97	34.05	35.08	36.06	37	37
36	-9.58	-0.41	5.29	9.51	12.88	15.7	18.13	20.27	22.2	23.95	25.54	27.01	28.38	29.66	30.86	32	33.08	34.1	35.07	36	36
35	-10.28	-1.17	4.5	8.69	12.04	14.84	17.25	19.38	21.29	23.02	24.61	26.07	27.43	28.71	29.9	31.03	32.1	33.11	34.08	35	35
34	-10.99	-1.93	3.71	7.87	11.19	13.98	16.38	18.49	20.39	22.11	23.68	25.14	26.49	27.75	28.94	30.06	31.12	32.12	33.08	34	34
33	-11.69	-2.68	2.91	7.05	10.35	13.12	15.5	17.6	19.48	21.19	22.75	24.2	25.54	26.79	27.97	29.08	30.14	31.14	32.09	33	33
32	-12.39	-3.44	2.12	6.23	9.51	12.25	14.62	16.71	18.58	20.27	21.83	23.26	24.59	25.84	27.01	28.11	29.16	30.15	31.1	32	32
31	-13.09	-4.2	1.33	5.41	8.66	11.39	13.74	15.82	17.67	19.36	20.9	22.32	23.65	24.88	26.05	27.14	28.18	29.16	30.1	31	31
30	-13.8	-4.96	0.53	4.58	7.82	10.53	12.87	14.93	16.77	18.44	19.97	21.39	22.7	23.93	25.08	26.17	27.2	28.18	29.11	30	30
29	-14.5	-5.72	-0.27	3.76	6.98	9.67	11.99	14.03	15.86	17.52	19.04	20.45	21.75	22.97	24.12	25.2	26.22	27.19	28.12	29	29
28	-15.21	-6.48	-1.06	2.94	6.13	8.8	11.11	13.14	14.96	16.61	18.12	19.51	20.8	22.01	23.15	24.22	25.24	26.2	27.12	28	28
27	-15.92	-7.25	-1.86	2.11	5.29	7.94	10.23	12.25	14.05	15.69	17.19	18.57	19.86	21.06	22.19	23.25	24.26	25.22	26.13	27	27
26	-16.63	-8.01	-2.66	1.29	4.44	7.08	9.35	11.35	13.14	14.77	16.26	17.63	18.91	20.1	21.22	22.28	23.28	24.23	25.14	26	26
25	-17.33	-8.77	-3.46	0.46	3.59	6.21	8.47	10.46	12.24	13.85	15.35	16.69	17.96	19.15	20.26	21.31	22.3	23.24	24.14	25	25
24	-18.04	-9.54	-4.26	-0.36	2.75	5.35	7.59	9.56	11.33	12.93	14.4	15.75	17.01	18.19	19.29	20.33	21.32	22.26	23.16	24	24
23	-18.75	-10.3	-5.06	-1.19	1.9	4.48	6.71	8.67	10.42	12.01	13.47	14.81	16.06	17.23	18.33	19.36	20.34	21.27	22.16	23	23
22	-19.47	-11.07	-5.86	-2.02	1.05	3.62	5.83	7.77	9.52	11.09	12.54	13.88	15.12	16.27	17.36	18.39	19.36	20.28	21.16	22	22
21	-20.18	-11.83	-6.66	-2.84	0.2	2.75	4.94	6.88	8.61	10.18	11.61	12.94	14.17	15.32	16.4	17.42	18.38	19.3	20.17	21	21
20	-20.89	-12.6	-7.46	-3.67	-0.65	1.88	4.06	5.98	7.7	9.26	10.68	12	13.22	14.36	15.43	16.44	17.4	18.31	19.17	20	20
19	-21.6	-13.37	-8.26	-4.5	-1.5	1.01	3.18	5.08	6.79	8.34	9.75	11.06	12.27	13.4	14.47	15.47	16.42	17.32	18.18	19	19
18	-22.32	-14.14	-9.07	-5.33	-2.35	0.15	2.3	4.19	5.88	7.41	8.82	10.11	11.32	12.44	13.5	14.5	15.44	16.33	17.19	18	18
17	-23.03	-14.91	-9.87	-6.16	-3.2	-0.72	1.41	3.29	4.97	6.49	7.89	9.17	10.37	11.49	12.53	13.52	14.46	15.35	16.19	17	17
16	-23.75	-15.68	-10.67	-6.99	-4.06	-1.59	0.53	2.39	4.06	5.57	6.96	8.23	9.42	10.53	11.57	12.55	13.48	14.36	15.2	16	16
15	-24.47	-16.45	-11.48	-7.82	-4.9	-2.46	-0.36	1.49	3.15	4.65	6.03	7.29	8.47	9.57	10.6	11.58	12.5	13.37	14.2	15	15
14	-25.19	-17.22	-12.28	-8.65	-5.75	-3.33	-1.24	0.6	2.24	3.73	5.09	6.35	7.52	8.61	9.64	10.6	11.52	12.38	13.21	14	14
13	-25.9	-17.99	-13.09	-9.48	-6.6	-4.2	-2.13	-0.3	1.33	2.81	4.16	5.41	6.57	7.65	8.67	9.63	10.54	11.4	12.22	13	13
12	-26.62	-18.77	-13.9	-10.31	-7.46	-5.07	-3.01	-1.2	0.42	1.89	3.23	4.47	5.62	6.69	7.7	8.65	9.55	10.41	11.22	12	12
11	-27.35	-19.54	-14.71	-11.15	-8.31	-5.94	-3.9	-2.1	-0.49	0.96	2.3	3.53	4.67	5.73	6.74	7.66	8.57	9.42	10.23	11	11
10	-28.07	-20.31	-15.51	-11.98	-9.16	-6.81	-4.78	-3	-1.4	0.04	1.36	2.58	3.72	4.78	5.77	6.71	7.59	8.43	9.24	10	10
5	-31.69	-24.2	-19.56	-16.16	-13.44	-11.17	-9.22	-7.5	-5.97	-4.58	-3.3	-2.13	-1.04	-0.02	0.93	1.83	2.69	3.5	4.27	5	5
0	-35.33	-28.1	-23.63	-20.35	-17.79	-15.55	-13.67	-12.02	-10.54	-9.2	-7.98	-6.85	-5.8	-4.82	-3.91	-3.04	-2.22	-1.45	-0.71	0	0

Source: https://www.mrfixitbali.com/images/articleimages/dew-point-chart-full.pdf



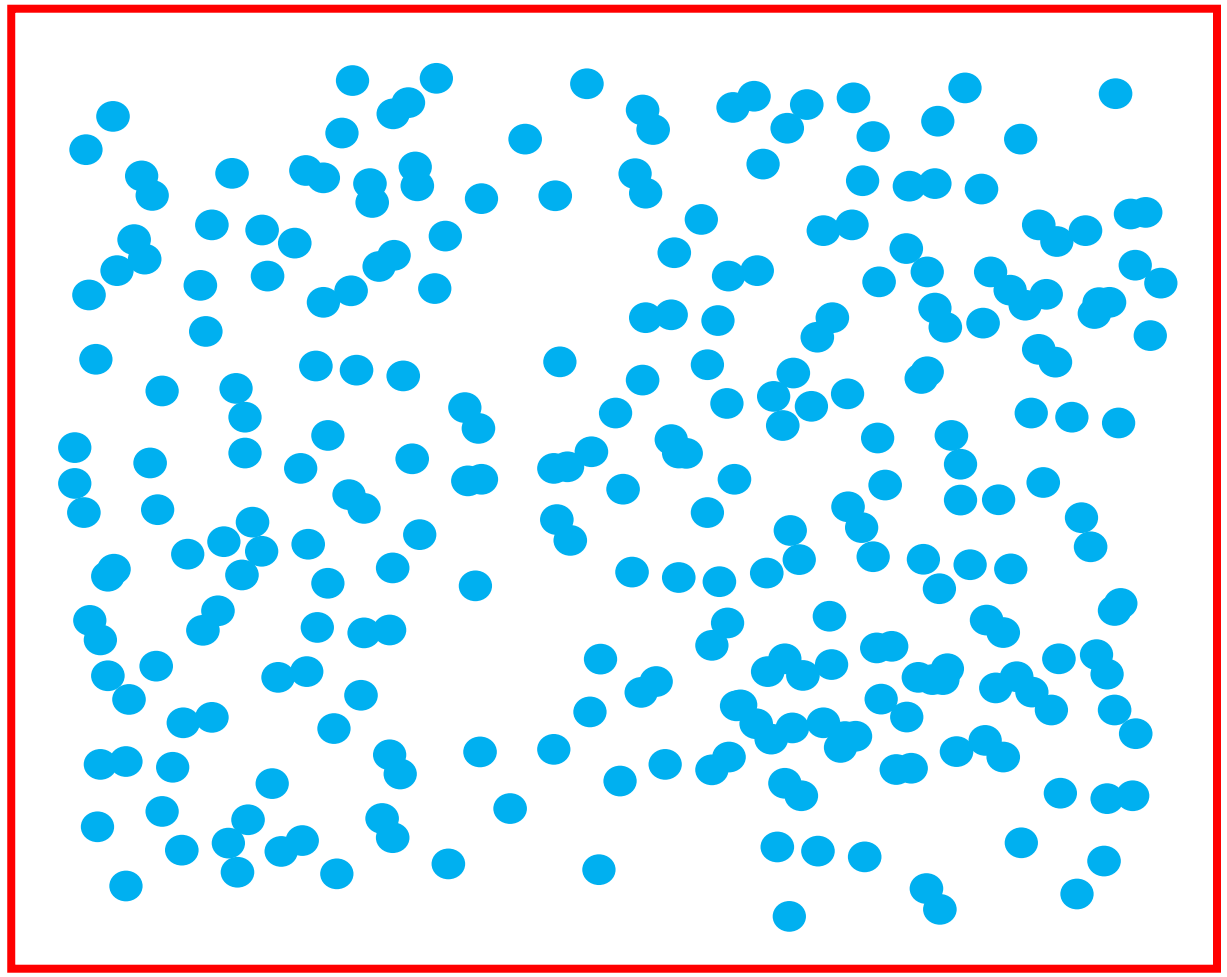
DEW POINT IS WHERE WATER CONDENSE AFTER RH REACH 100%

Source: https://waterproofing.com.sg/understanding-dampness-and-condensation/



DEW POINT IS WHERE WATER CONDENSE WHEN THE AIR TEMPERATURE GETS LOWER

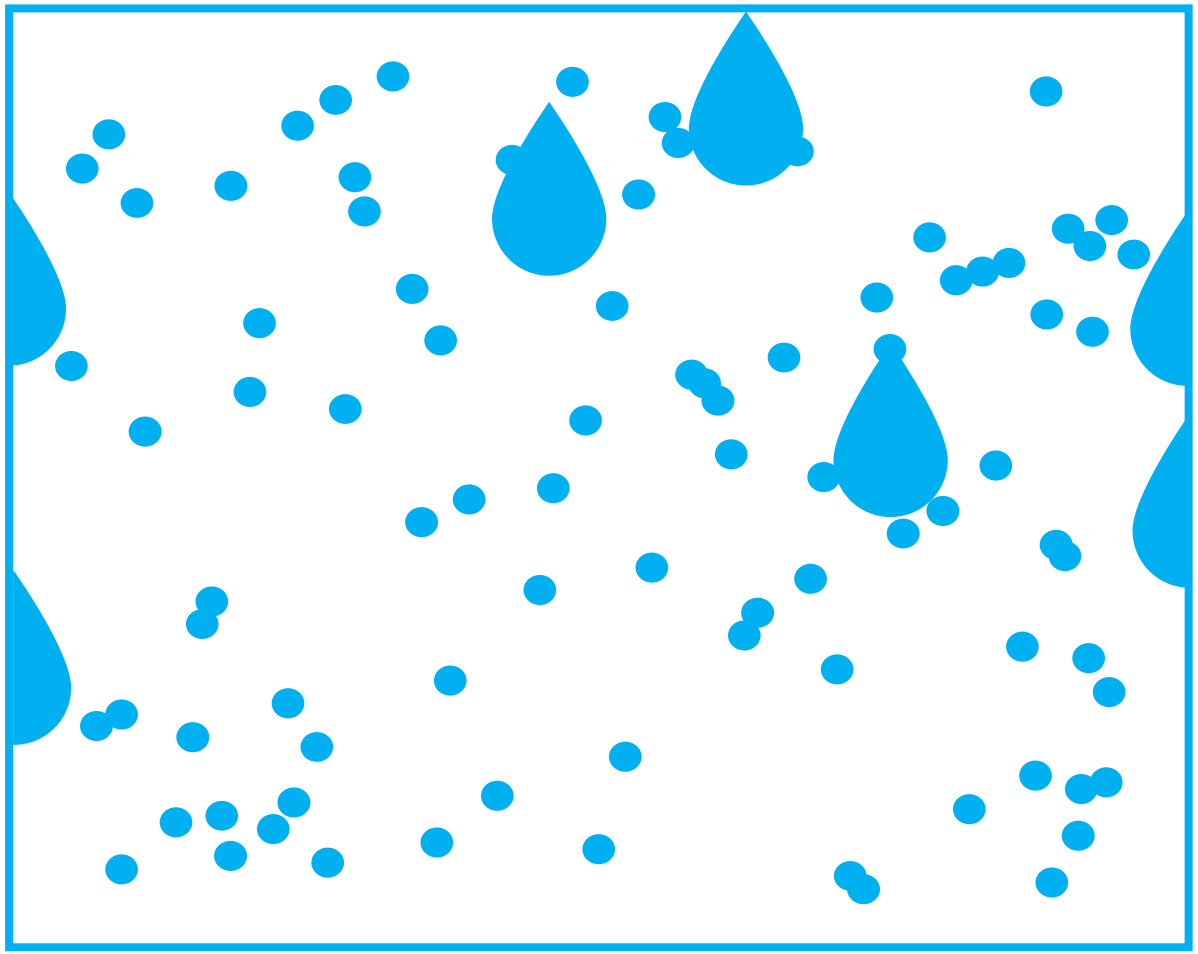
Source: https://waterproofing.com.sg/understanding-dampness-and-condensation/



AMOUNT OF WATER IN
A HOT CHAMBER

HOTTER AIR CAN HOLD MORE MOISTURE

Source: https://windy.app/blog/dew-point-explaining-in-simple-words.html



AMOUNT OF WATER IN
A COLD CHAMBER

COLDER AIR CAN HOLD LESS MOISTURE, SO IT CONDENSES

Source: https://windy.app/blog/dew-point-explaining-in-simple-words.html

IF YOU HAVE COLD SURFACE MEETING A HOTTER SURFACE

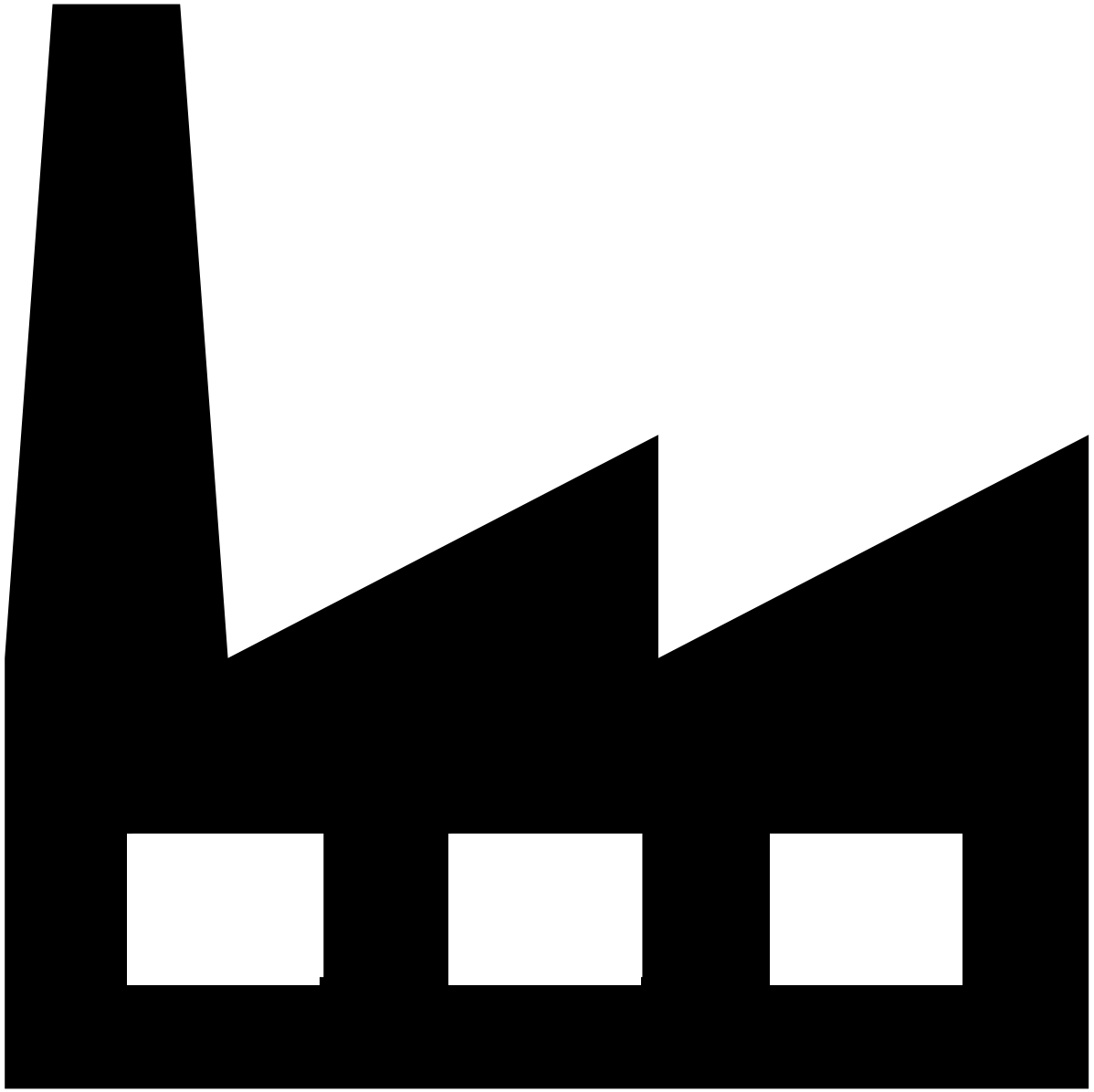
Source: https://parenting.firstcry.com/articles/is-drinking-cold-water-after-delivery-safe/

OBSERVE THE DIFFERENCE

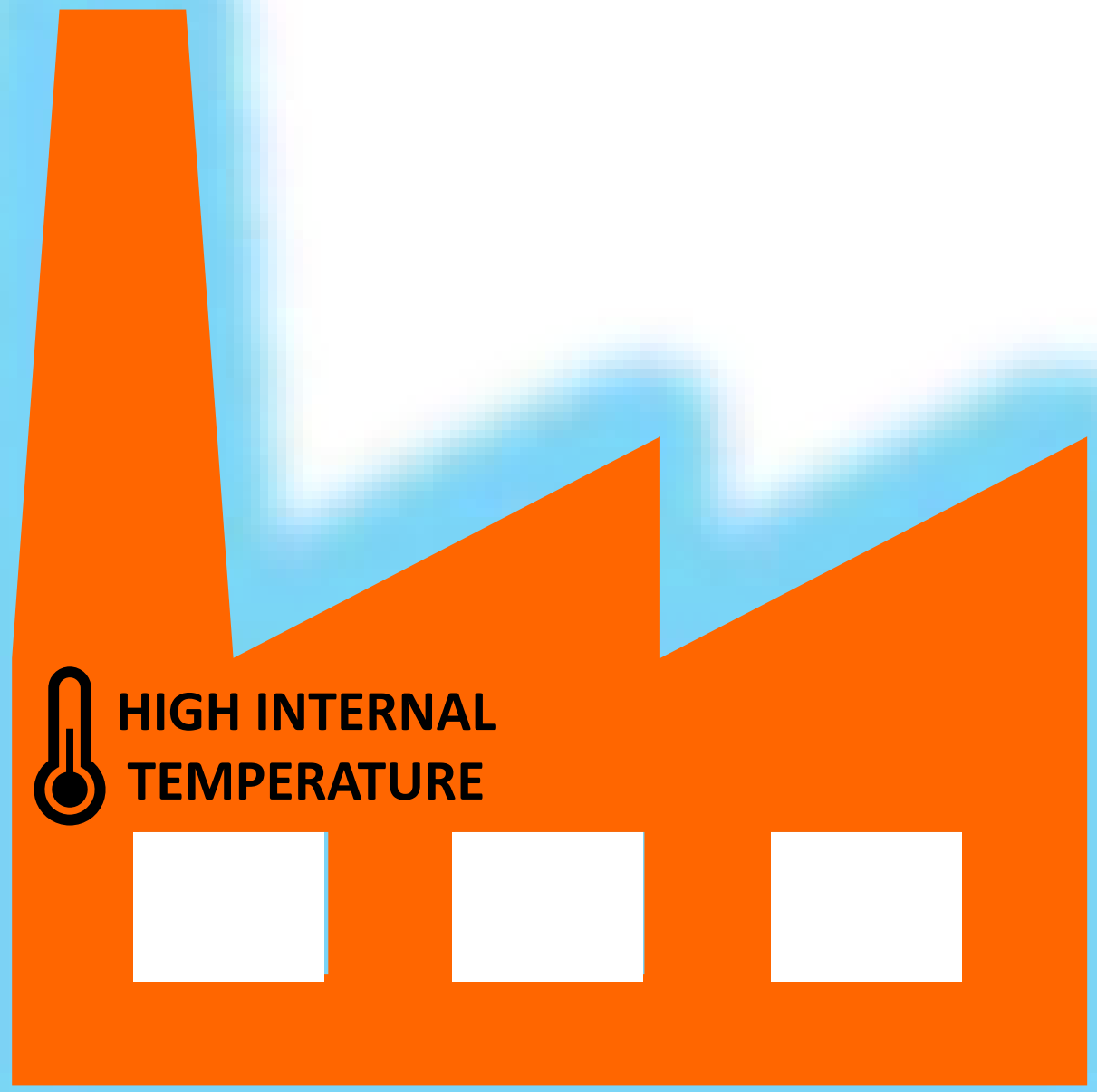
Source: https://parenting.firstcry.com/articles/is-drinking-cold-water-after-delivery-safe/

ANOTHER EXAMPLE

Source:



IMAGINE A 24/7 FACTORY



OPERATING DURING NIGHT HOURS

23°C

40°C

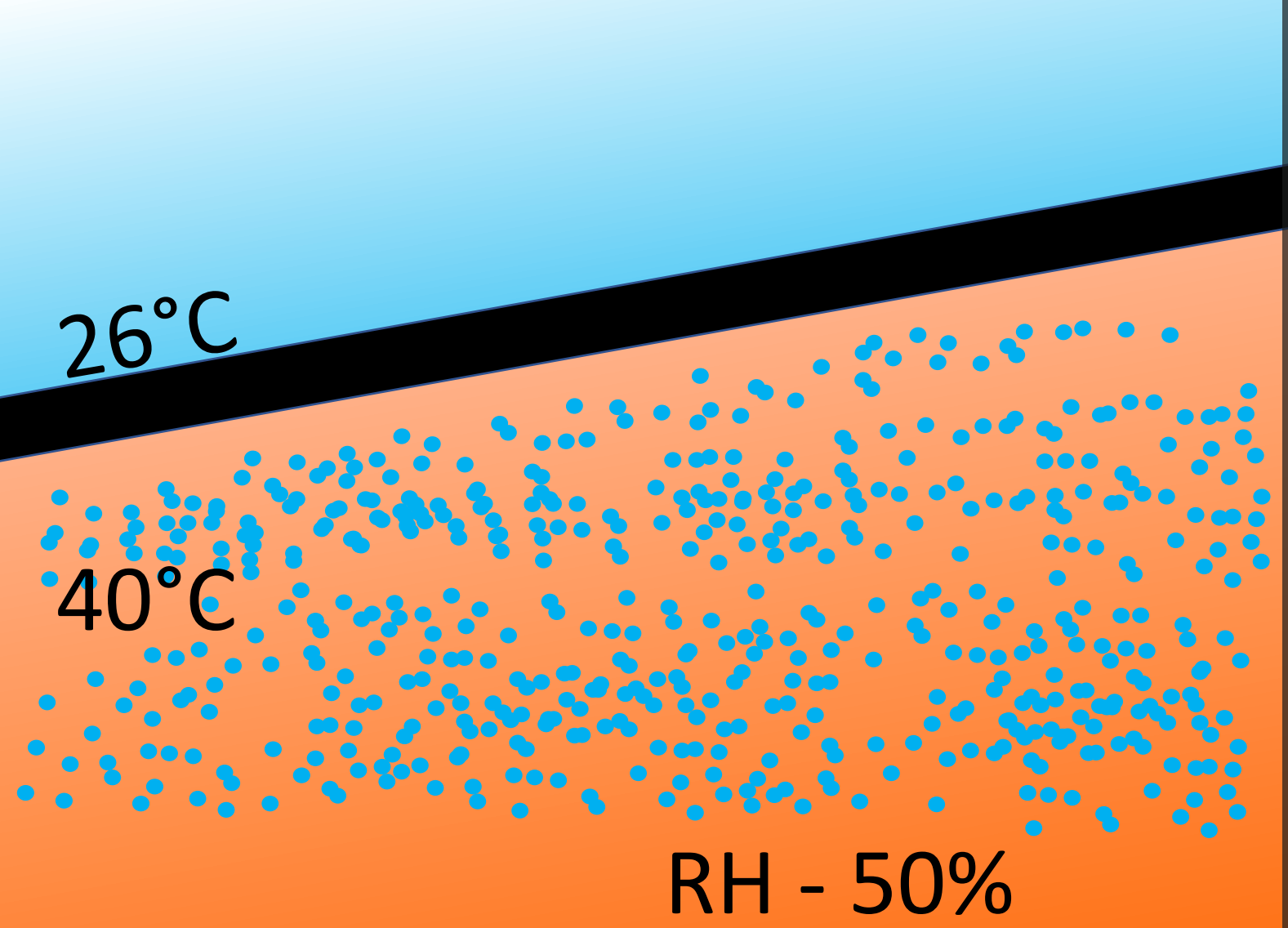
INTERNAL HOTTER THAN EXTERNAL

23°C

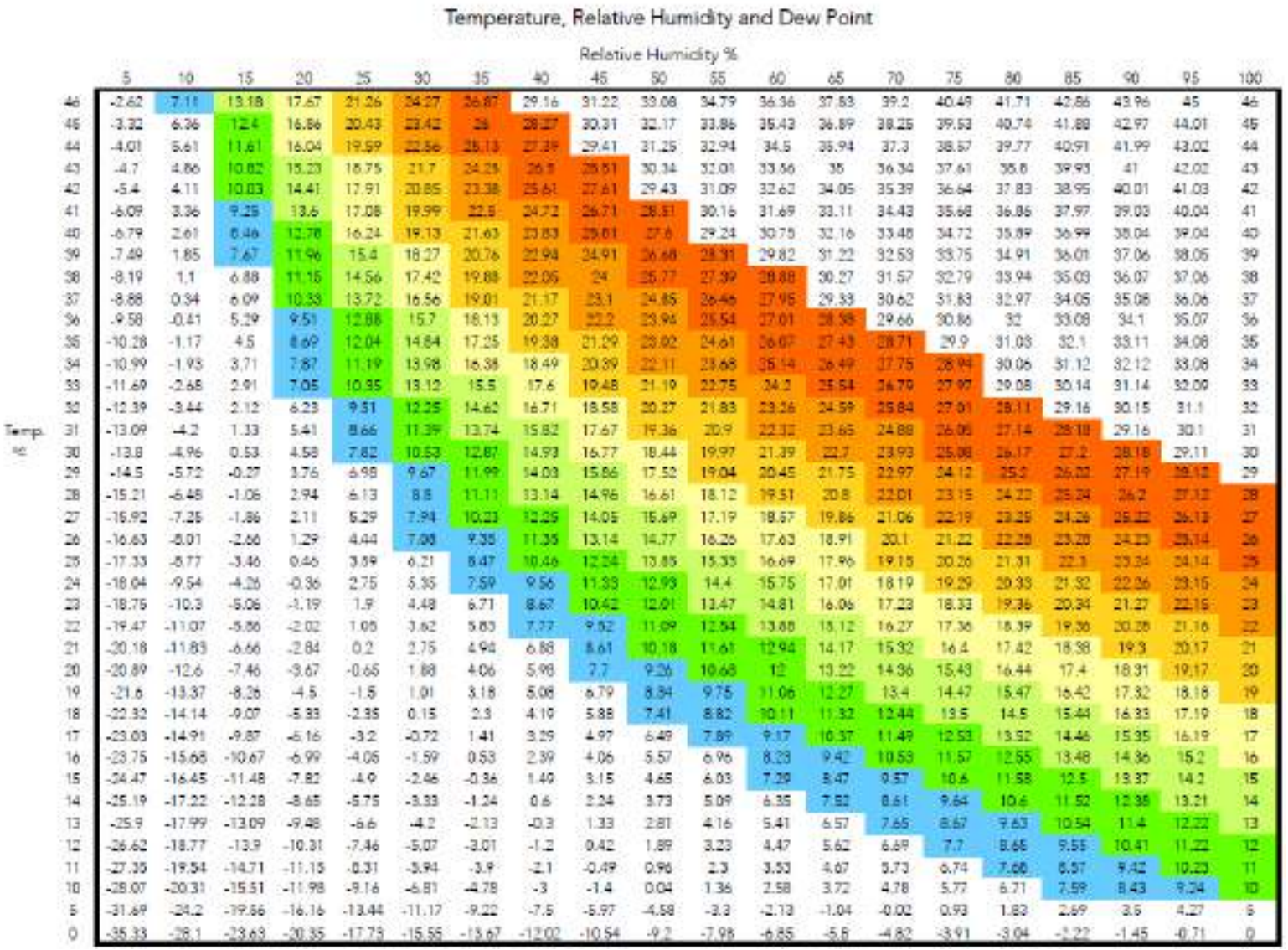
26°C

40°C

ROOF TEMP. AT 26°C



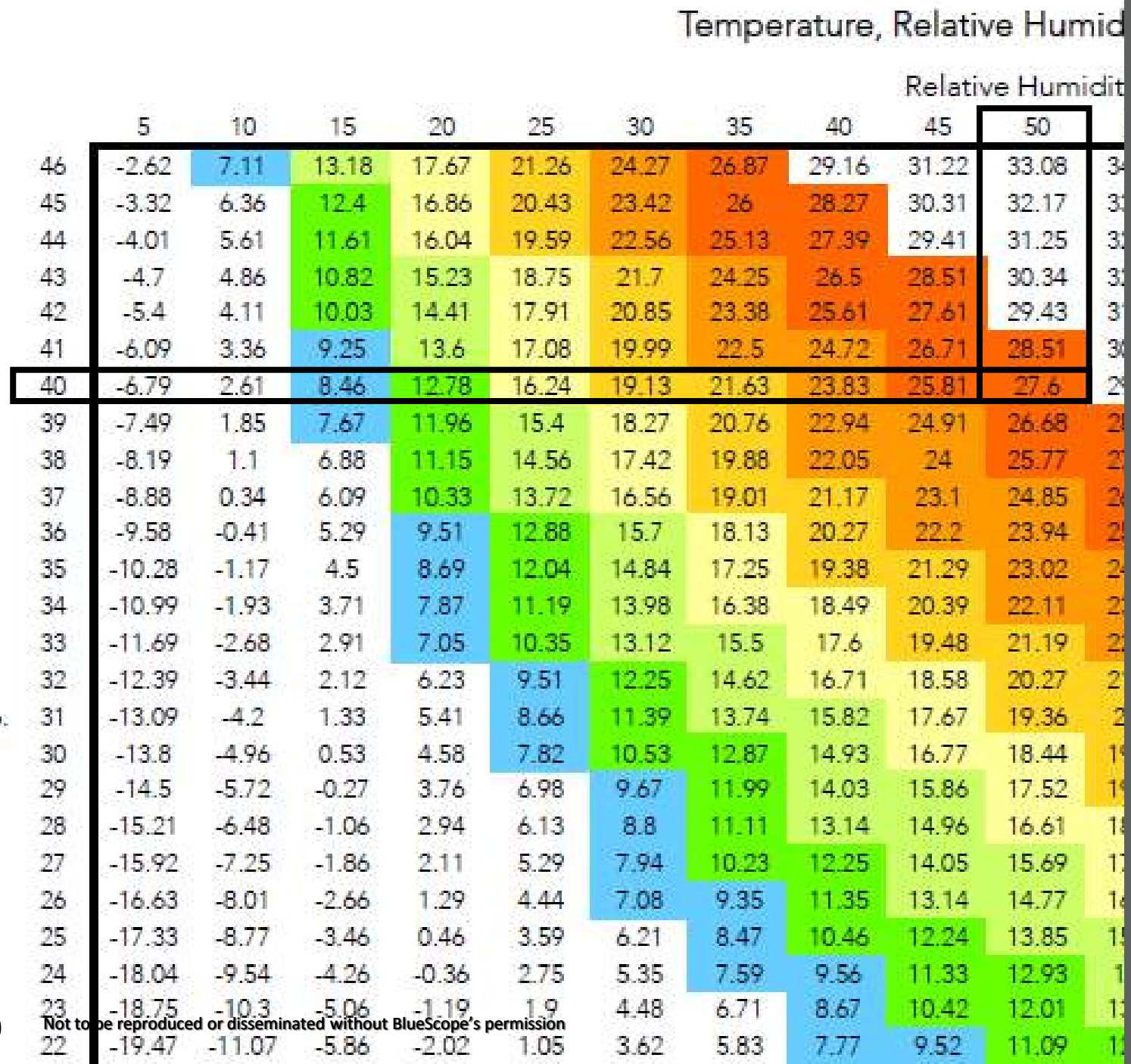
RELATIVE HUMIDITY IS 50%



Temp.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	Temp.
46	-2.62	7.11	13.18	17.67	21.26	24.27	26.87	29.16	31.22	33.08	34.79	36.36	37.83	39.2	40.49	41.71	42.86	43.96	45	46	46
45	-3.32	6.36	12.4	16.86	20.43	23.42	26	28.27	30.31	32.17	33.86	35.43	36.89	38.25	39.53	40.74	41.88	42.97	44.01	45	45
44	-4.01	5.61	11.61	16.04	19.59	22.56	25.13	27.39	29.41	31.25	32.94	34.5	35.94	37.3	38.57	39.77	40.91	41.99	43.02	44	44
43	-4.7	4.86	10.82	15.23	18.75	21.7	24.25	26.5	28.51	30.34	32.01	33.56	35	36.34	37.61	38.8	39.93	41	42.02	43	43
42	-5.4	4.11	10.03	14.41	17.91	20.85	23.38	25.61	27.61	29.43	31.09	32.62	34.05	35.39	36.64	37.83	38.95	40.01	41.03	42	42
41	-6.09	3.36	9.25	13.6	17.08	19.99	22.5	24.72	26.71	28.51	30.16	31.69	33.11	34.43	35.68	36.86	37.97	39.03	40.04	41	41
40	-6.79	2.61	8.46	12.78	16.24	19.13	21.63	23.83	25.81	27.6	29.24	30.75	32.16	33.48	34.72	35.89	36.99	38.04	39.04	40	40
39	-7.49	1.85	7.67	11.96	15.4	18.27	20.76	22.98	24.91	26.68	28.31	29.82	31.22	32.53	33.75	34.91	36.01	37.06	38.05	39	39
38	-8.19	1.1	6.88	11.15	14.56	17.42	19.88	22.06	24	25.77	27.39	28.88	30.27	31.57	32.79	33.94	35.03	36.07	37.06	38	38
37	-8.88	0.34	6.09	10.33	13.72	16.56	19.01	21.17	23.1	24.85	26.46	27.95	29.33	30.62	31.83	32.97	34.05	35.08	36.06	37	37
36	-9.58	-0.41	5.29	9.51	12.88	15.7	18.13	20.27	22.2	23.96	25.54	27.01	28.38	29.66	30.86	32	33.08	34.1	35.07	36	36
35	-10.28	-1.17	4.5	8.69	12.04	14.84	17.25	19.38	21.29	23.02	24.61	26.07	27.43	28.71	29.9	31.03	32.1	33.11	34.08	35	35
34	-10.99	-1.93	3.71	7.87	11.19	13.98	16.38	18.49	20.39	22.11	23.68	25.14	26.49	27.75	28.94	30.06	31.12	32.12	33.08	34	34
33	-11.69	-2.68	2.91	7.05	10.35	13.12	15.5	17.6	19.48	21.19	22.75	24.2	25.54	26.79	27.97	29.08	30.14	31.14	32.09	33	33
32	-12.39	-3.44	2.12	6.23	9.51	12.25	14.62	16.71	18.58	20.27	21.83	23.26	24.59	25.84	27.01	28.11	29.16	30.15	31.1	32	32
31	-13.09	-4.2	1.33	5.41	8.66	11.39	13.74	15.82	17.67	19.36	20.9	22.32	23.65	24.88	26.06	27.14	28.18	29.16	30.1	31	31
30	-13.8	-4.96	0.53	4.58	7.82	10.53	12.87	14.93	16.77	18.44	19.97	21.39	22.7	23.93	25.08	26.17	27.2	28.18	29.11	30	30
29	-14.5	-5.72	-0.27	3.76	6.98	9.67	11.99	14.03	15.86	17.52	19.04	20.45	21.75	22.97	24.12	25.2	26.22	27.19	28.12	29	29
28	-15.21	-6.48	-1.06	2.94	6.13	8.8	11.11	13.14	14.96	16.61	18.12	19.51	20.8	22.01	23.15	24.22	25.24	26.2	27.13	28	28
27	-15.92	-7.25	-1.86	2.11	5.29	7.94	10.23	12.25	14.05	15.69	17.19	18.57	19.86	21.06	22.19	23.25	24.26	25.22	26.13	27	27
26	-16.63	-8.01	-2.66	1.29	4.44	7.08	9.35	11.35	13.14	14.77	16.26	17.63	18.91	20.1	21.22	22.28	23.28	24.23	25.14	26	26
25	-17.33	-8.77	-3.46	0.46	3.59	6.21	8.47	10.46	12.24	13.85	15.33	16.69	17.96	19.15	20.28	21.31	22.3	23.24	24.14	25	25
24	-18.04	-9.54	-4.26	-0.36	2.75	5.35	7.59	9.56	11.33	12.93	14.4	15.75	17.01	18.19	19.29	20.33	21.32	22.26	23.15	24	24
23	-18.75	-10.3	-5.06	-1.19	1.9	4.48	6.71	8.67	10.42	12.01	13.47	14.81	16.06	17.23	18.33	19.36	20.34	21.27	22.15	23	23
22	-19.47	-11.07	-5.86	-2.02	1.05	3.62	5.83	7.77	9.52	11.09	12.54	13.88	15.12	16.27	17.36	18.39	19.36	20.28	21.16	22	22
21	-20.18	-11.83	-6.66	-2.84	0.2	2.75	4.94	6.88	8.61	10.18	11.61	12.94	14.17	15.32	16.4	17.42	18.38	19.3	20.17	21	21
20	-20.89	-12.6	-7.46	-3.67	-0.65	1.88	4.06	5.98	7.7	9.26	10.68	12	13.22	14.36	15.43	16.44	17.4	18.31	19.17	20	20
19	-21.6	-13.37	-8.26	-4.5	-1.5	1.01	3.18	5.08	6.79	8.34	9.75	11.06	12.27	13.4	14.47	15.47	16.42	17.32	18.18	19	19
18	-22.32	-14.14	-9.07	-5.33	-2.35	0.15	2.3	4.19	5.88	7.41	8.82	10.11	11.32	12.44	13.5	14.5	15.44	16.33	17.19	18	18
17	-23.03	-14.91	-9.87	-6.16	-3.2	-0.72	1.41	3.29	4.97	6.49	7.89	9.17	10.37	11.49	12.53	13.52	14.46	15.35	16.19	17	17
16	-23.75	-15.68	-10.67	-6.99	-4.06	-1.59	0.53	2.39	4.06	5.57	6.96	8.23	9.42	10.53	11.57	12.55	13.48	14.36	15.2	16	16
15	-24.47	-16.45	-11.48	-7.82	-4.9	-2.46	-0.36	1.49	3.15	4.65	6.03	7.29	8.47	9.57	10.6	11.58	12.5	13.37	14.2	15	15
14	-25.19	-17.22	-12.28	-8.65	-5.75	-3.33	-1.24	0.6	2.24	3.73	5.09	6.35	7.52	8.61	9.64	10.6	11.52	12.38	13.21	14	14
13	-25.9	-17.99	-13.09	-9.48	-6.6	-4.2	-2.13	-0.3	1.33	2.81	4.16	5.41	6.57	7.65	8.67	9.63	10.54	11.4	12.22	13	13
12	-26.62	-18.77	-13.9	-10.31	-7.46	-5.07	-3.01	-1.2	0.42	1.89	3.23	4.47	5.62	6.69	7.7	8.65	9.55	10.41	11.22	12	12
11	-27.35	-19.54	-14.71	-11.15	-8.31	-5.94	-3.9	-2.1	-0.49	0.96	2.3	3.53	4.67	5.73	6.74	7.68	8.57	9.42	10.23	11	11
10	-28.07	-20.31	-15.51	-11.98	-9.16	-6.81	-4.78	-3	-1.4	0.04	1.36	2.58	3.72	4.78	5.77	6.71	7.59	8.43	9.24	10	10
5	-31.69	-24.2	-19.66	-16.16	-13.44	-11.17	-9.22	-7.5	-5.97	-4.58	-3.3	-2.13	-1.04	-0.02	0.93	1.83	2.69	3.5	4.27	5	5
0	-35.33	-28.1	-23.63	-20.35	-17.75	-15.55	-13.67	-12.02	-10.54	-9.2	-7.98	-6.85	-5.8	-4.82	-3.91	-3.04	-2.22	-1.45	-0.71	0	0

REFER BACK TO THE DEW POINT CHART

Source: https://www.mrfixitbali.com/images/articleimages/dew-point-chart-full.pdf



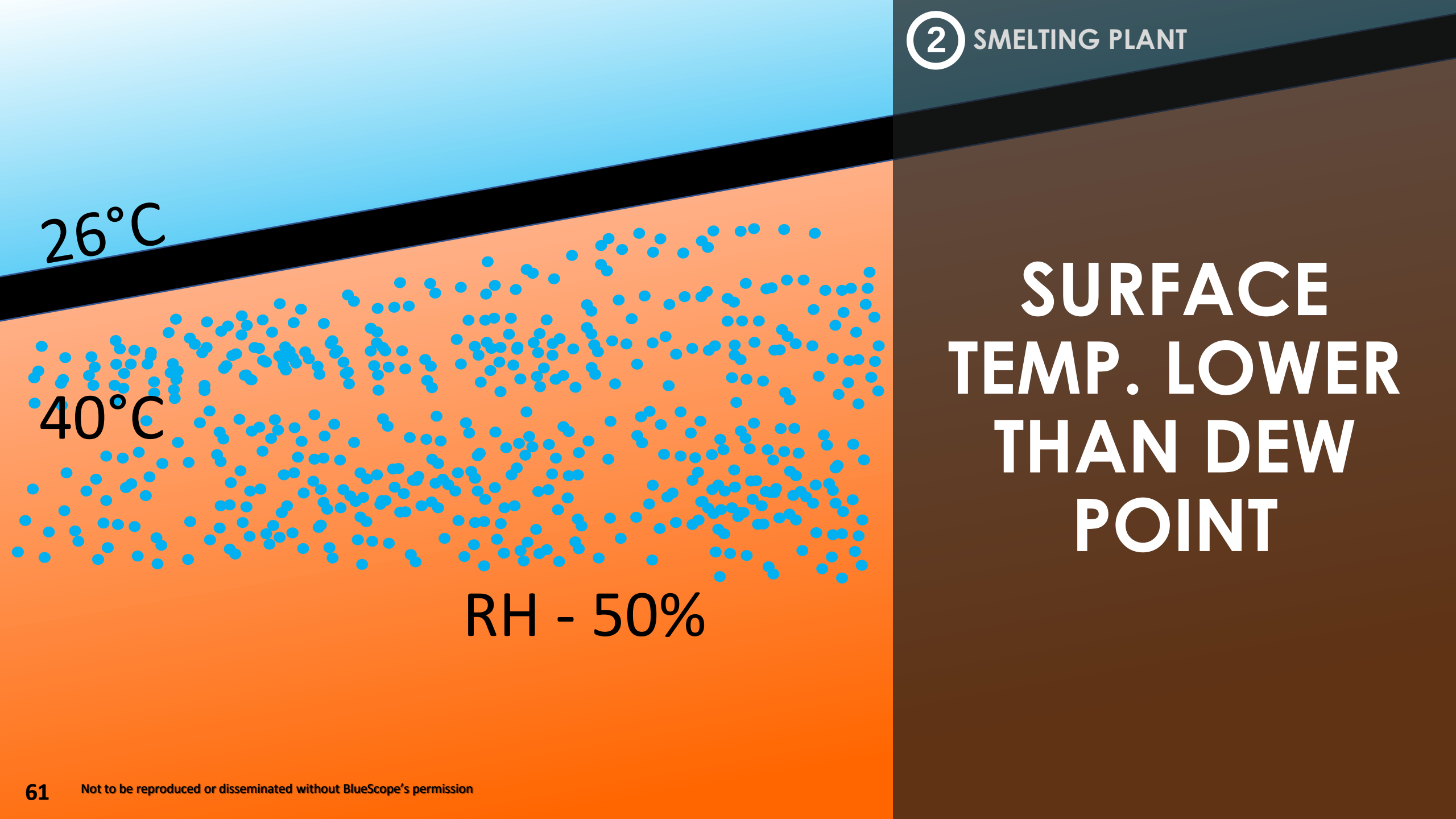
Temperature, Relative Humid

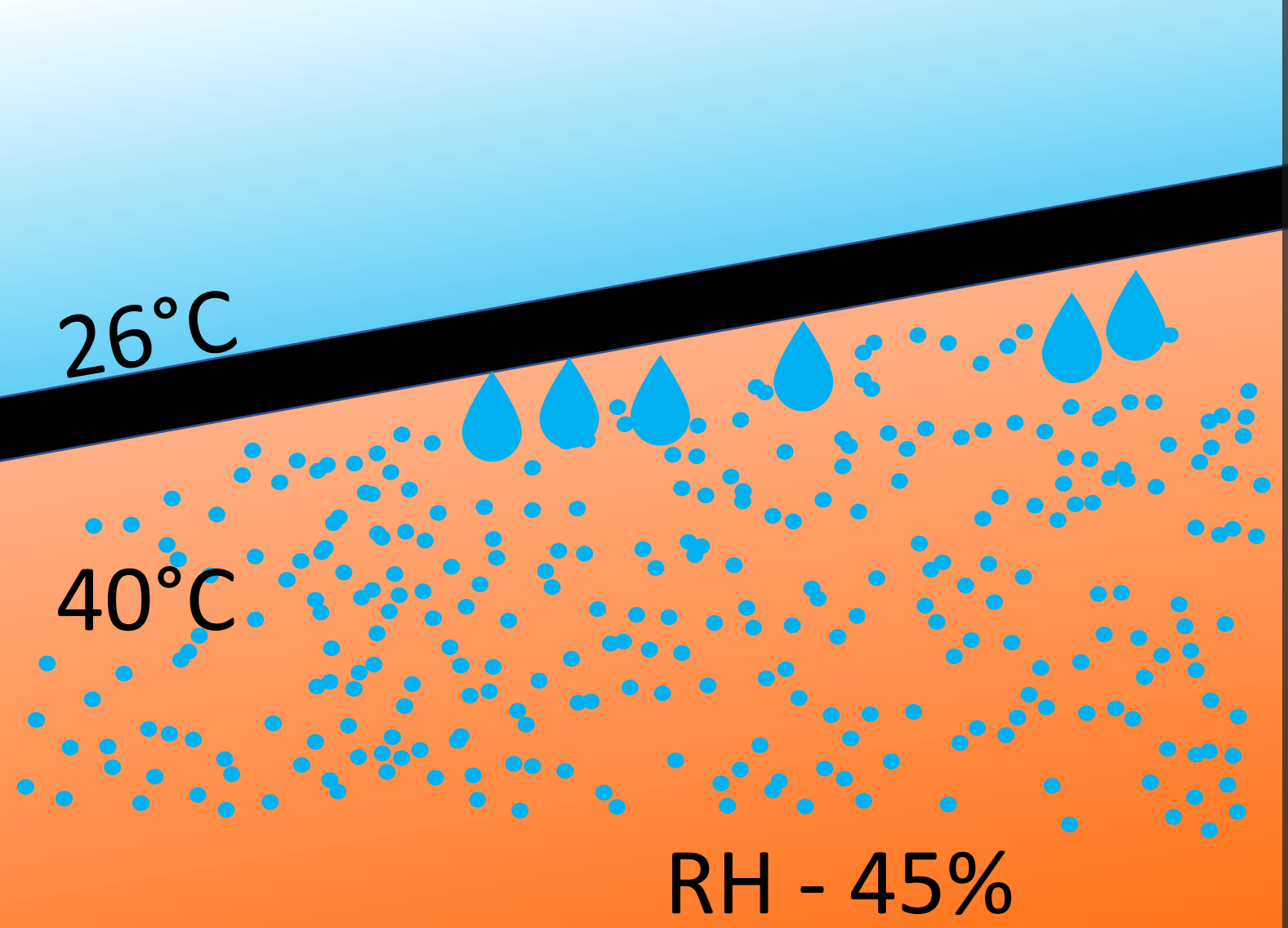
Relative Humidit

Temp. °C	5	10	15	20	25	30	35	40	45	50	
46	-2.62	7.11	13.18	17.67	21.26	24.27	26.87	29.16	31.22	33.08	34
45	-3.32	6.36	12.4	16.86	20.43	23.42	26	28.27	30.31	32.17	3
44	-4.01	5.61	11.61	16.04	19.59	22.56	25.13	27.39	29.41	31.25	3
43	-4.7	4.86	10.82	15.23	18.75	21.7	24.25	26.5	28.51	30.34	3
42	-5.4	4.11	10.03	14.41	17.91	20.85	23.38	25.61	27.61	29.43	3
41	-6.09	3.36	9.25	13.6	17.08	19.99	22.5	24.72	26.71	28.51	3
40	-6.79	2.61	8.46	12.78	16.24	19.13	21.63	23.83	25.81	27.6	2
39	-7.49	1.85	7.67	11.96	15.4	18.27	20.76	22.94	24.91	26.68	2
38	-8.19	1.1	6.88	11.15	14.56	17.42	19.88	22.05	24	25.77	2
37	-8.88	0.34	6.09	10.33	13.72	16.56	19.01	21.17	23.1	24.85	2
36	-9.58	-0.41	5.29	9.51	12.88	15.7	18.13	20.27	22.2	23.94	2
35	-10.28	-1.17	4.5	8.69	12.04	14.84	17.25	19.38	21.29	23.02	2
34	-10.99	-1.93	3.71	7.87	11.19	13.98	16.38	18.49	20.39	22.11	2
33	-11.69	-2.68	2.91	7.05	10.35	13.12	15.5	17.6	19.48	21.19	2
32	-12.39	-3.44	2.12	6.23	9.51	12.25	14.62	16.71	18.58	20.27	2
31	-13.09	-4.2	1.33	5.41	8.66	11.39	13.74	15.82	17.67	19.36	2
30	-13.8	-4.96	0.53	4.58	7.82	10.53	12.87	14.93	16.77	18.44	1
29	-14.5	-5.72	-0.27	3.76	6.98	9.67	11.99	14.03	15.86	17.52	1
28	-15.21	-6.48	-1.06	2.94	6.13	8.8	11.11	13.14	14.96	16.61	1
27	-15.92	-7.25	-1.86	2.11	5.29	7.94	10.23	12.25	14.05	15.69	1
26	-16.63	-8.01	-2.66	1.29	4.44	7.08	9.35	11.35	13.14	14.77	1
25	-17.33	-8.77	-3.46	0.46	3.59	6.21	8.47	10.46	12.24	13.85	1
24	-18.04	-9.54	-4.26	-0.36	2.75	5.35	7.59	9.56	11.33	12.93	1
23	-18.75	-10.3	-5.06	-1.19	1.9	4.48	6.71	8.67	10.42	12.01	1
22	-19.47	-11.07	-5.86	-2.02	1.05	3.62	5.83	7.77	9.52	11.09	1

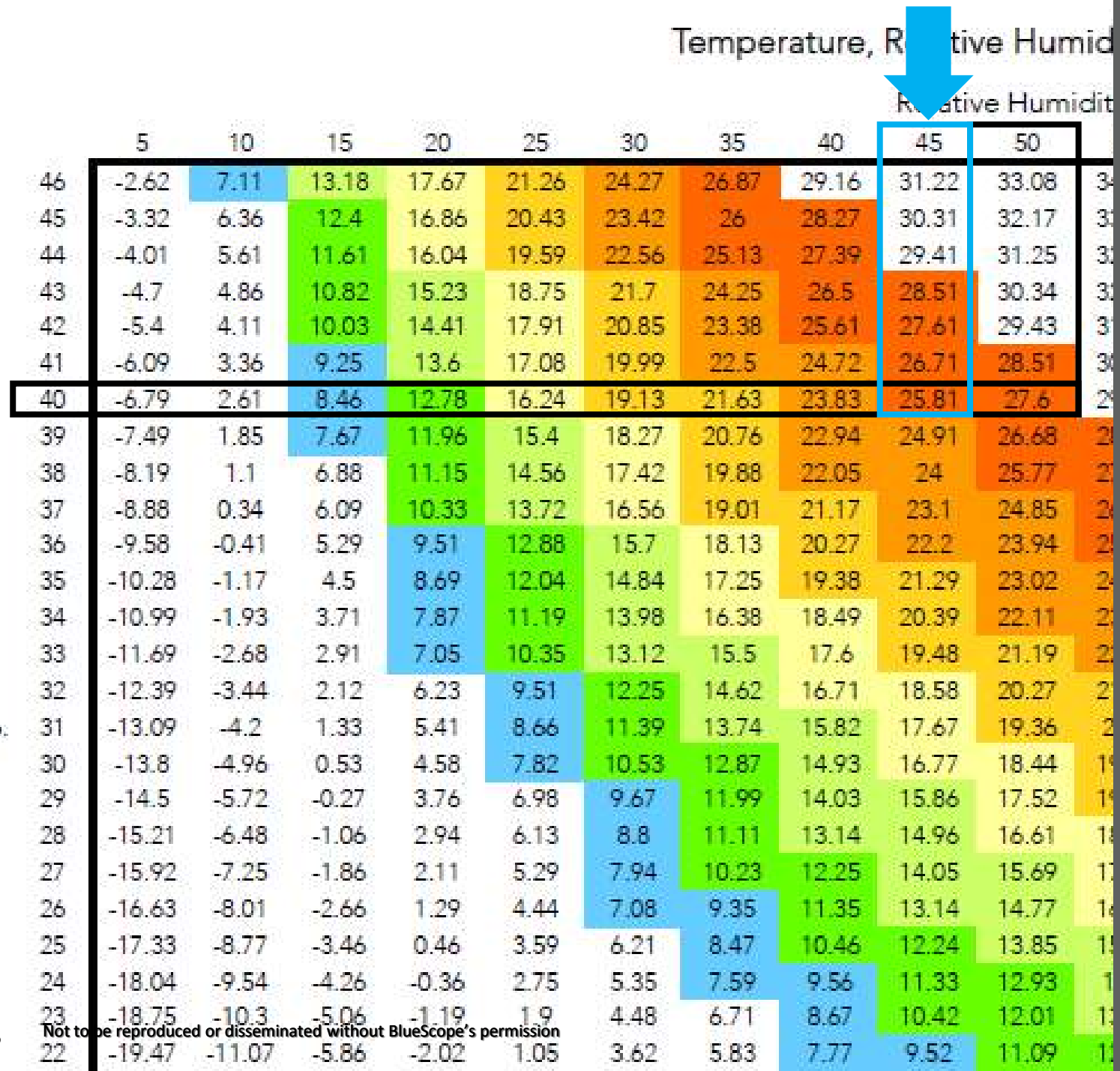
DEW POINT IS 27.6°C

Source: https://www.mrfixitbali.com/images/articleimages/dew-point-chart-full.pdf





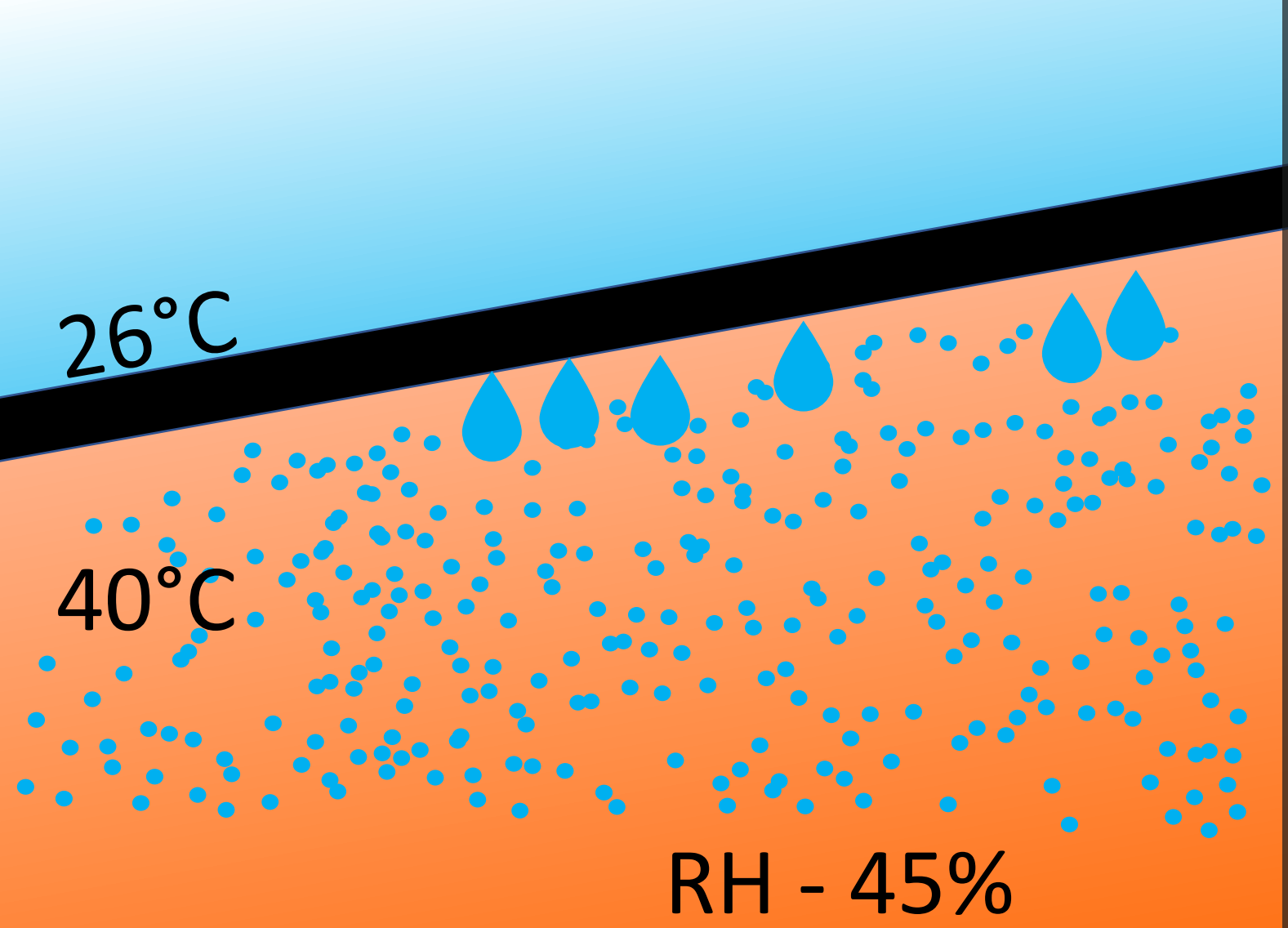
MOISTURE CONDENSES ONTO THE SURFACE



Temp. °C	5	10	15	20	25	30	35	40	45	50	
46	-2.62	7.11	13.18	17.67	21.26	24.27	26.87	29.16	31.22	33.08	34
45	-3.32	6.36	12.4	16.86	20.43	23.42	26	28.27	30.31	32.17	3
44	-4.01	5.61	11.61	16.04	19.59	22.56	25.13	27.39	29.41	31.25	3
43	-4.7	4.86	10.82	15.23	18.75	21.7	24.25	26.5	28.51	30.34	3
42	-5.4	4.11	10.03	14.41	17.91	20.85	23.38	25.61	27.61	29.43	3
41	-6.09	3.36	9.25	13.6	17.08	19.99	22.5	24.72	26.71	28.51	3
40	-6.79	2.61	8.46	12.78	16.24	19.13	21.63	23.83	25.81	27.6	2
39	-7.49	1.85	7.67	11.96	15.4	18.27	20.76	22.94	24.91	26.68	2
38	-8.19	1.1	6.88	11.15	14.56	17.42	19.88	22.05	24	25.77	2
37	-8.88	0.34	6.09	10.33	13.72	16.56	19.01	21.17	23.1	24.85	2
36	-9.58	-0.41	5.29	9.51	12.88	15.7	18.13	20.27	22.2	23.94	2
35	-10.28	-1.17	4.5	8.69	12.04	14.84	17.25	19.38	21.29	23.02	2
34	-10.99	-1.93	3.71	7.87	11.19	13.98	16.38	18.49	20.39	22.11	2
33	-11.69	-2.68	2.91	7.05	10.35	13.12	15.5	17.6	19.48	21.19	2
32	-12.39	-3.44	2.12	6.23	9.51	12.25	14.62	16.71	18.58	20.27	2
31	-13.09	-4.2	1.33	5.41	8.66	11.39	13.74	15.82	17.67	19.36	2
30	-13.8	-4.96	0.53	4.58	7.82	10.53	12.87	14.93	16.77	18.44	1
29	-14.5	-5.72	-0.27	3.76	6.98	9.67	11.99	14.03	15.86	17.52	1
28	-15.21	-6.48	-1.06	2.94	6.13	8.8	11.11	13.14	14.96	16.61	1
27	-15.92	-7.25	-1.86	2.11	5.29	7.94	10.23	12.25	14.05	15.69	1
26	-16.63	-8.01	-2.66	1.29	4.44	7.08	9.35	11.35	13.14	14.77	1
25	-17.33	-8.77	-3.46	0.46	3.59	6.21	8.47	10.46	12.24	13.85	1
24	-18.04	-9.54	-4.26	-0.36	2.75	5.35	7.59	9.56	11.33	12.93	1
23	-18.75	-10.3	-5.06	-1.19	1.9	4.48	6.71	8.67	10.42	12.01	1
22	-19.47	-11.07	-5.86	-2.02	1.05	3.62	5.83	7.77	9.52	11.09	1

NEW DEW POINT IS 25.8°C

Source: https://www.mrfixitbali.com/images/articleimages/dew-point-chart-full.pdf



RELATIVE HUMIDITY WILL BE REDUCED TOO

JUST IMAGINE THE COLD GLASS OF WATER

ACCELERATE CORROSION

Source: BlueScope

EFFECT OF PROLONGED MOISTURE EXPOSURE

Source: BlueScope

EFFECT OF PROLONGED MOISTURE EXPOSURE

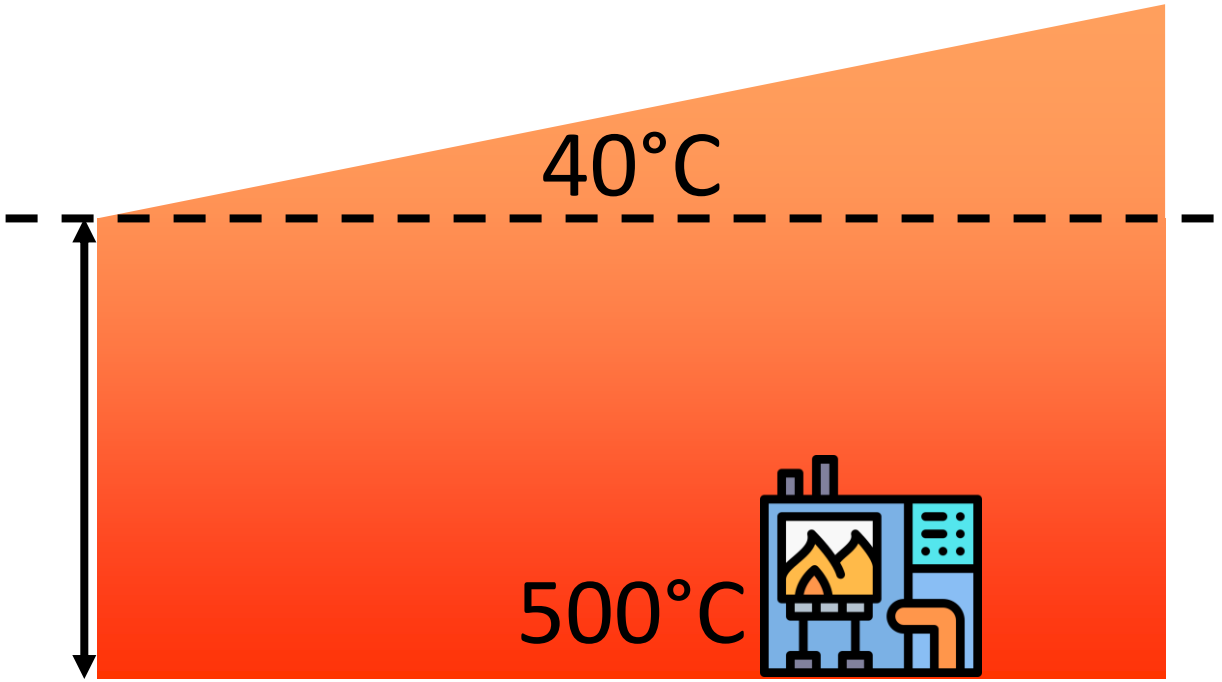
Source: BlueScope

SUFFICIENT VENTILATION

Source: https://www.pexels.com/photo/dirty-equipment-industrial-plant-industry-416423/

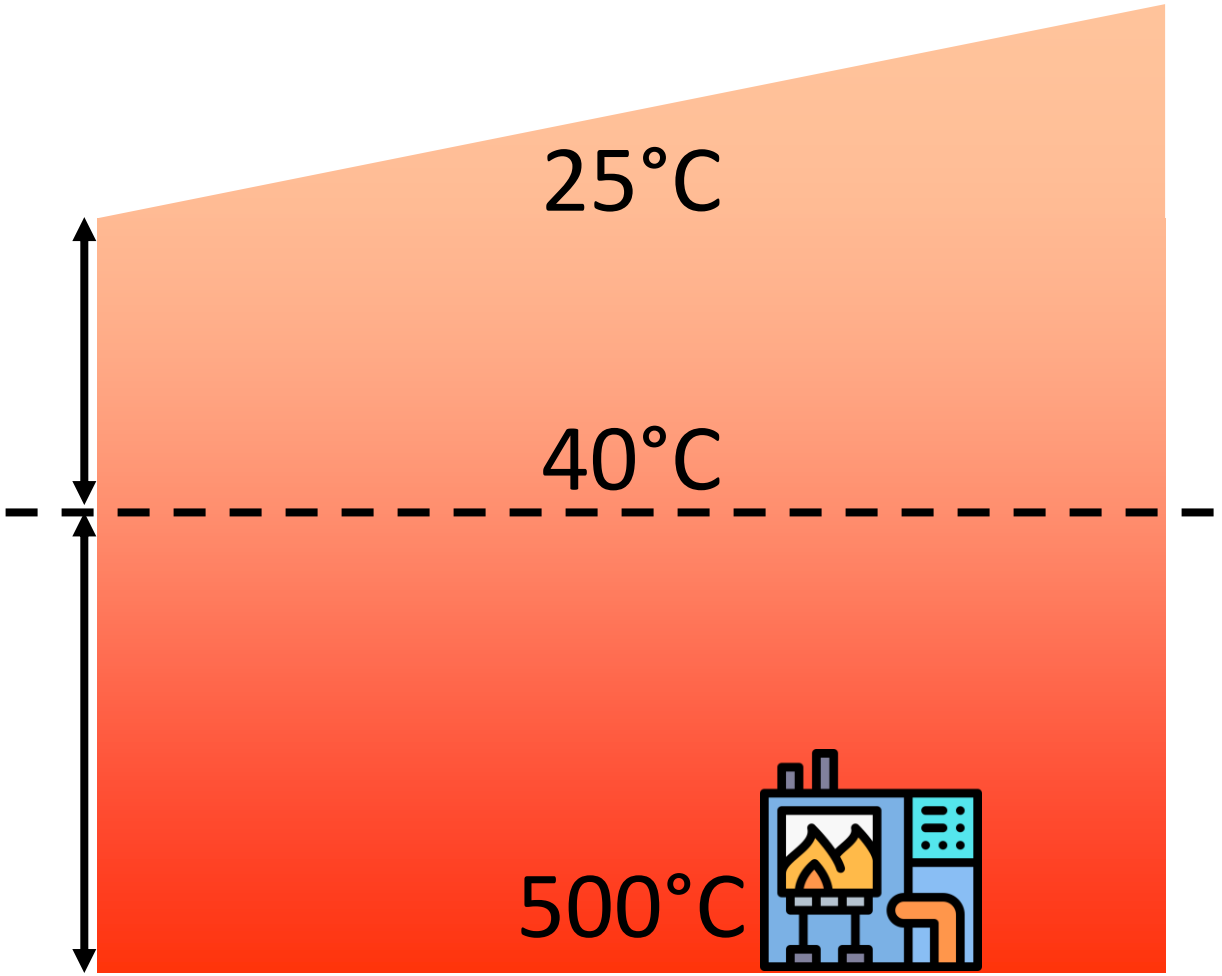
JUST HAVING MORE BUILDING OPENINGS IS NOT GOOD ENOUGH

Source: BlueScope



INCREASE ROOF HEIGHT

Source: Icon made by Freepik from www.flaticon.com



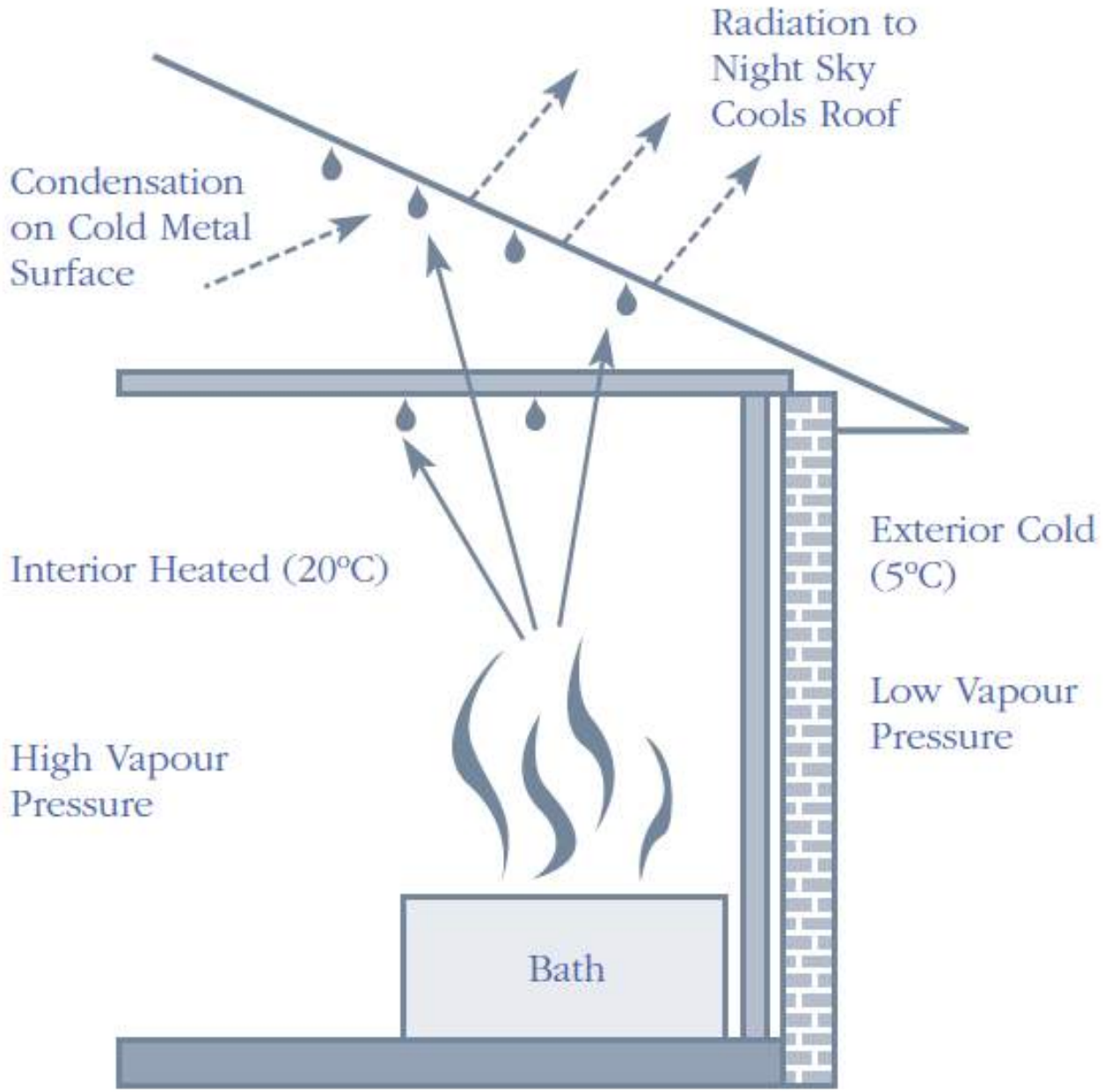
TEMPERATURE AT ROOF INNER SURFACE WILL BE LOWER

Source: Icon made by Freepik from www.flaticon.com

2 SMELTING PLANT

INTRODUCE A VAPOUR BARRIER THAT'S NOT REACTIVE TO MOISTURE

Source: BlueScope



VAPOUR BARRIER IS DIFFERENT FROM INSULATION

Source: BlueScope

SUMMARY

1. PALM OIL MILL

- RELEASE STEAM EXTERNALLY
- ADDITIONAL VAPOUR BARRIER

Source: https://www.britannica.com/topic/poultry-farming/Types-of-poultry

SUMMARY

2. SMELTING PLANT

- SUFFICIENT VENTILATION
- INCREASE ROOF HEIGHT
- ADDITIONAL VAPOUR BARRIER

QUESTION & ANSWER SESSION

Source: BlueScope

steel CONNECT

Colorbond VERMOE Zincalume TrueCore

BlueScope

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nsbluescope.com/my

BlueScope Malaysia

NS BlueScope Malaysia

NS BlueScope Malaysia