

PLEASE ADDRESS ANY CORRESPONDENCE TO WATER SUPPLY (NETWORK) DEPARTMENT

Your Ref :

Our Ref : WSN 92413/90/202109/PPR

Tel : 65172925

Date : 22 Jun 2021

E-mail : noryati\_abdullah@pub.gov.sg

To Professional Engineers, Licensed Plumbers, Singapore Sanitary Ware Importers & Exporters' Association (SSWIEA), Singapore Plumbing Society (SPS) and water fittings suppliers.

Dear Sir/Madam

## REMINDER ON INSTALLATION OF PLASTIC PIPES WHEN USED IN AREAS EXPOSED TO SUNLIGHT

This circular is to remind all relevant stakeholders and parties on the installation of plastic pipes when used in areas exposed to sunlight.

2. The Singapore Standard SS 636: 2018 – Code of Practice for Water Services clearly states

“Choice of materials for piping

**6.2.6** Plastic pipes include unplasticized polyvinyl chloride, polybutylene, polypropylene or polyethylene. Suppliers are to be consulted on the suitability of their use with hot water.

**6.2.8** As uPVC pipes do suffer some loss of properties when exposed to the combined effects of heat and ultra-violet light, they should not be used in areas exposed to direct sunlight. UPVC pipes should not be used as pump delivery pipes. Laying of plastic pipes should comply with the appropriate code.

3. PUB takes a serious view on the safety and reliability of our potable water supply to customers. Arising from some feedback on water quality, our investigations revealed the presence of algal biofilm in installed water service pipes made of plastic material (i.e. polypropylene (PPR)) in certain new developments. These pipes were laid exposed to sunlight. *Refer to **Annex A** for sample photos of the algal biofilm.*

4. In the event that the plastic pipes need to be laid exposed to sunlight, the installers shall ensure that the pipes itself are adequately protected in order to prevent pipe degradation and potential impact on water quality (e.g. algae growth within the pipes). If left unprotected, the plastic pipes could deteriorate, resulting in water contamination and/or water leakages.

5. PEs and LPs are strongly advised to take immediate measures for your existing/ongoing projects (i.e. before submission of Certificate of Satisfactory Completion of Water Service Work - CSC) to ensure that the pipes are adequately protected by suitable means (e.g. painting over the surface of the pipe, provided with additional insulation, etc.). You are also advised to work closely with the pipe suppliers on the appropriate means for pipe protection when installed under direct sunlight. *Refer to **Annex B** for typical sample of plastic pipes with painted surfaces.*

6. Additionally, for newly completed projects (i.e. within 1 year of CSC), PEs and LPs are also strongly advised to conduct the following actions to ensure good turnover of water in the reticulation system in the new development: -

- a) adjust the height of water in the water tank in accordance with the activity level in the developments i.e. water level should be adjusted to 30% if occupancy level or business activity is 30% (refer to details at **Annex C**); and
- b) If any of the tap point had not been used for >1 week, flush the water service pipes by running the tap for 5-10mins before using. This is to allow fresh water to fill the service pipes.

7. Please disseminate the information in this circular to your relevant staff, members, distributors, retailers and other industry partners for their information and compliance. A copy of this circular is also downloadable from PUB's website at [www.pub.gov.sg](http://www.pub.gov.sg).

8. If you have any queries or need further clarification or assistance, please email to Ms Fiona Wong and myself at [wong\\_hong\\_lan@pub.gov](mailto:wong_hong_lan@pub.gov) and [noryati\\_abdullah@pub.gov.sg](mailto:noryati_abdullah@pub.gov.sg).

Yours faithfully



NORYATI ABDULLAH (MS)  
SENIOR ENGINEER (INSPECTORATE)  
for DIRECTOR  
WATER SUPPLY (NETWORK) DEPARTMENT

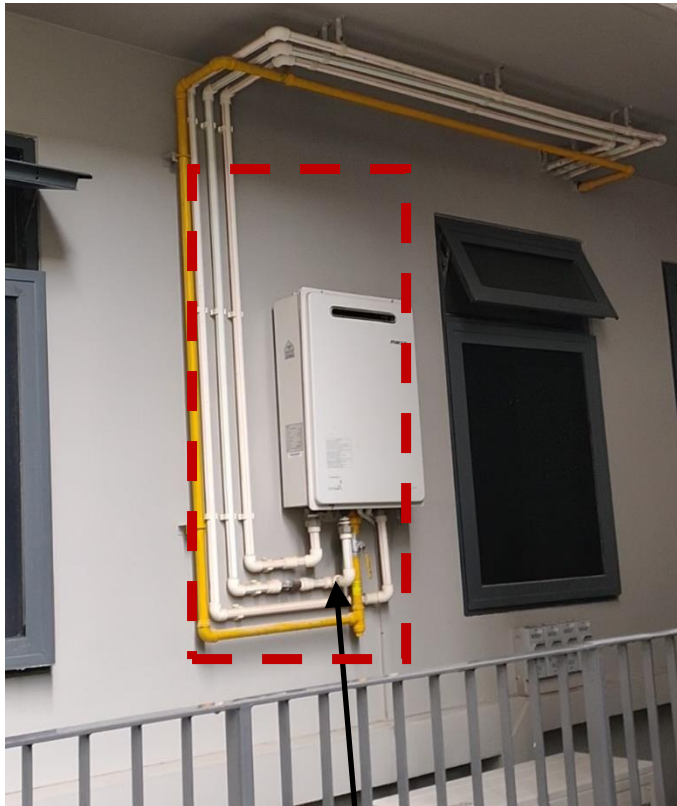
Enclosed

**cc Distribution (via email)**

<b>No</b>	<b>Name of agency/organisation</b>	<b>Business Address</b>	<b>Addressee</b>
1	The President Institution of Engineers, Singapore (IES)	70 Bukit Tinggi Road Singapore 289758	ies@iesnet.org.sg rickie.teo@iesnet.org.sg
2	The President Association Of Consulting Engineers, Singapore (ACES)	18 Sin Ming Lane #06-01 Midview City, Singapore 573960	secretariat@aces.org.sg
3	The President Singapore Contractors Association Limited (SCAL) Construction House	1 Bukit Merah Lane 2 Singapore 159760	esther@scal.com.sg huiqin@scal.com.sg enquiry@scal.com.sg
4	The President Singapore Institute Of Architects (SIA)	79 Neil Road Singapore 088904	cijc@sia.org.sg info@sia.org.sg
5	The President Society Of Project Managers (SPM)	Macpherson Road P.O. Box 1083 Singapore 913412	societyofprojectmanagers@gmail.com
6	The President Singapore Institute of Building Limited (SIBL)	20 Maxwell Road, #08-06 Maxwell House Singapore 069113	josephine@sibl.com.sg info@sibl.com.sg
7	The President Real Estate Developers' Association Of Singapore (REDAS)	190 Clemenceau Avenue #07-01 Singapore Shopping Centre Singapore 239924	redas_secretariat@redas.com geoklee@redas.com celine@redas.com
8	The President Professional Engineers Board, Singapore (PEB)	52 Jurong Gateway Road #07-03 Singapore 608550	registrar@peb.gov.sg
9	The President Board Of Architects (BOA)	5 Maxwell Road 1st Storey Tower Block MND Complex Singapore 069110	boarch@singnet.com.sg
10	Infrastructure and Facility Services Division School Campus Department Ministry Of Education	1 North Buona Vista Drive, Office Tower Level 9 Singapore 138675	CHOO_Boon_Chiao@moe.gov.sg
11	Building Service & Construction Department Construction Productivity and Mechanical & Electrical Department Housing & Development Board	480 Lorong 6 Toa Payoh #15-00 East Wing HDB Hub Singapore 310480	ng_thiam_min@hdb.gov.sg
12	Development & Construction Productivity Department Building Quality Group Housing & Development Board	480 Lorong 6 Toa Payoh HDB Hub Singapore 310480	denis_tm_wong@hdb.gov.sg
13	Engineering & Operations Group Projects Management JTC Corporation	8 Jurong Town Hall Road The JTC Summit Singapore 609434	teo_tiong_yong@jtc.gov.sg
14	Engineering & Operations Group Facilities & Estates JTC Corporation	9 Jurong Town Hall Road The JTC Summit Singapore 609435	mark_koh@jtc.gov.sg
15	Engineering & Operations Group Engineering JTC Corporation	10 Jurong Town Hall Road The JTC Summit Singapore 609436	Calvin_CHUNG@jtc.gov.sg
16	Building & Estates Management People's Association	9 King George's Avenue Singapore 208581	David_LOW@pa.gov.sg

No	Name of agency/organisation	Business Address	Addressee
17	Building Engineering Division Building And Construction Authority	52 Jurong Gateway Road, #12-00 Singapore 608550	CHEW_Keat_Chuan@bca.gov.sg
18	Training & Professional Development BCA Academy Of The Built Environment Building And Construction Authority	200 Braddell Road Singapore 579700	Leong-Kok_Su_Ming@bca.gov.sg
19	Setsco Services Pte Ltd	18 Teban Gardens Crescent Singapore 608925	yusoof@setsco.com chenyu@setsco.com ngds@setsco.com
20	TUV SUD PSB Pte Ltd	15 International Business Park TÜV SÜD @ IBP Singapore 609937	Ming-Yang.CHA@tuvsud.com
21	Singapore Laboratory Services	64 Tuas South Ave 2 Singapore 637525	jimmy.lee@sls-singapore.sg leechoong.chua@sls-singapore.sg
22	Singapore Test Lab Pte Ltd	10B Enterprise Road Singapore 629828	chuapc@singaporetestlab.sg gohsl@singaporetestlab.sg
23	The President Singapore Sanitary Ware Importers & Exporters Association (SSWIEA)	61 Ubi Road 1 #02-02, Oxley Bizhub Singapore 408727	secretary@sswiea.org.sg
24	The President Singapore Plumbing Society (SPS)	3027A Ubi Road 3 #01-94 Singapore 408656	secretary@plumbing.org.sg
25	The Secretariat Office Micro Builders Association, Singapore	18 Sin Ming Ln, #02-08 Midview City, Singapore 573960	info@mbas.org.sg
26	All relevant water fittings suppliers	-	-

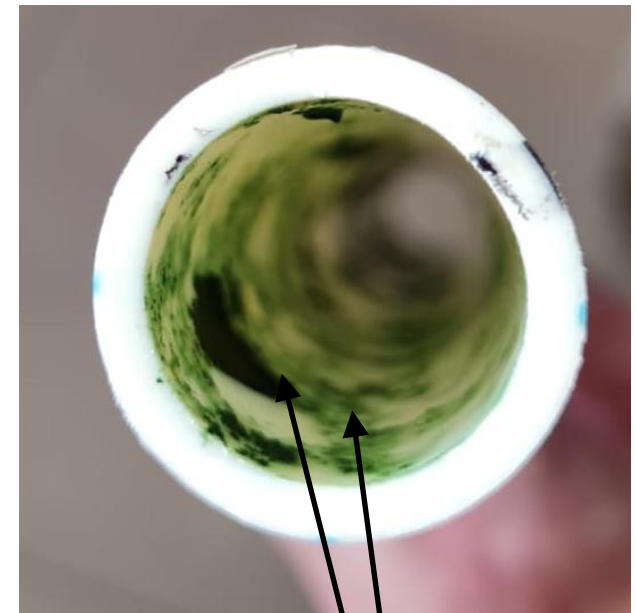
Photos of algal biofilm found in polypropylene (PPR) water service pipes installed exposed to sunlight



PPR water service pipes not protected when installed exposed to sunlight.



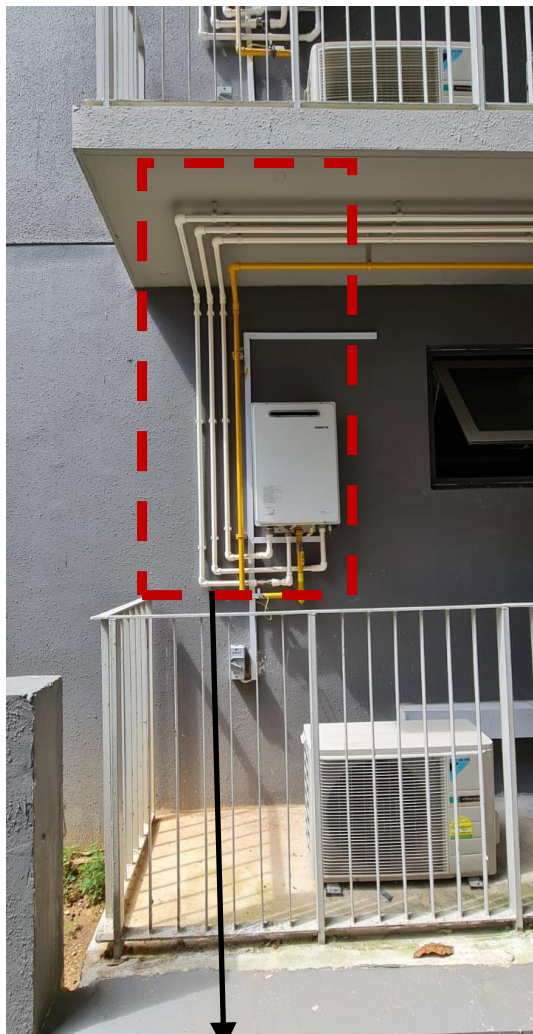
Algae in water from service pipe



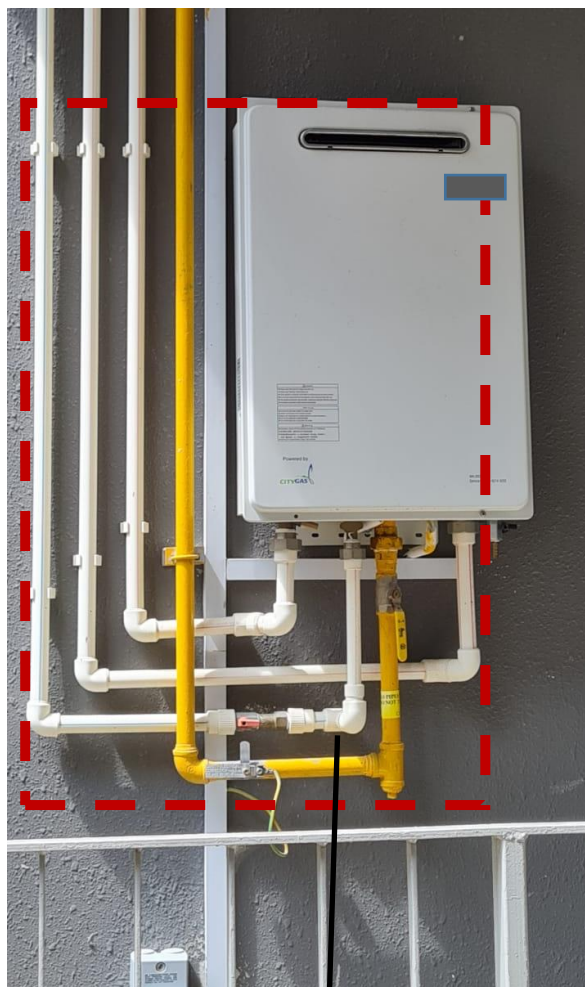
Presence of algal biofilm within the pipe



Typical sample of plastic pipes painted on surface as protection



Painted PPR water service pipes installed exposed to sunlight.



Close-up view of installed PPR water service pipes.



Close-up view of painted PPR water service pipes.

**Ensuring Good Turnover of Water in Reticulation System**

Status of Occupancy or Business Activity	@ Water Tank & Service Pipe Network	@ Tap Points
<b>&lt;25% occupancy or business activity</b>	A. Turnover of water tank and flushing of service pipe network every two weeks; <b><u>AND</u></b>  B. Adjust water storage level to 25%	If tap point had not been used for >1 week, run the tap for 5-10mins before using. This is to allow fresh water to fill the service pipes.
<b>25% - 50% occupancy or business activity</b>	A. Turnover of water tank and flushing of service pipe network every two weeks; <b><u>OR</u></b>  B. Adjust water storage level according to occupancy level or business activity, i.e. water storage should be adjusted to 30% if occupancy level or business activity is 30%	
<b>&gt;50% occupancy or business activity</b>	Monitor water consumption closely to ensure water storage level is according to occupancy level i.e. Buildings with 70% occupancy level should be using 70% of water in storage tank	