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WATCH WATER
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FILTERSORB
FILTRATION
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INSTANT PRODUCTS
OXY TREATMENT
SYSTEMS



OXY TREATMENT · SURFACE LONGEVITY

NTD LonGeVity-Purity

Exclusively manufactured by Watch Water®

Surface science in service of humanity.

- SURFACE CLEANING
- GLASS CLARITY
- COATING DURABILITY

01 / PURPOSE AND SCIENCE

NTD FOR SURFACE LONGEVITY

A focused technical brochure for LonGeVity-Purity, covering physical surface performance and maintenance.

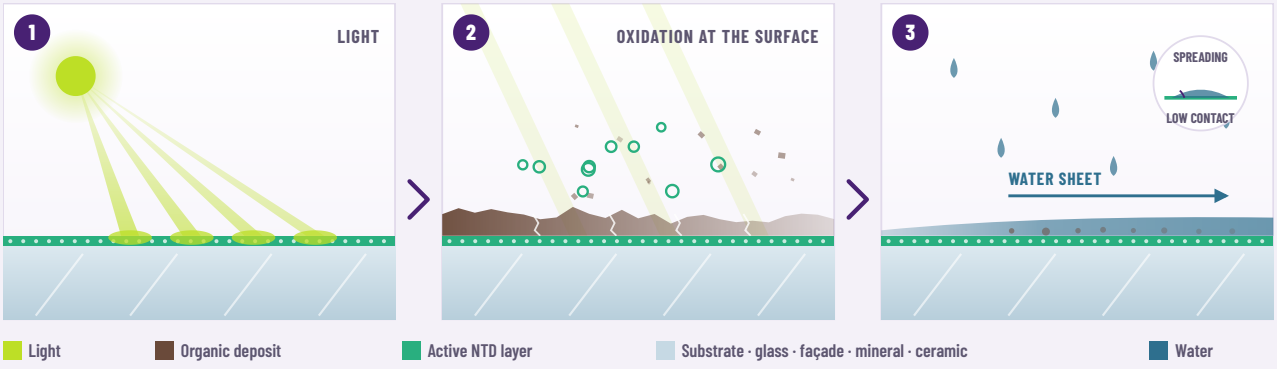


NTD is manufactured exclusively by Watch Water® for LonGeVity-Purity. This brochure brings together published research relevant to surface cleaning and coating durability.

WHAT THIS EVIDENCE CONTRIBUTES

Five published records examine outdoor glass exposure, façade maintenance, stain fading and coating durability. Together they help define useful performance targets for NTD and the conditions under which a surface treatment should be assessed.

HOW A LIGHT-RESPONSIVE SURFACE CAN ASSIST CLEANING



1 LIGHT REACHES THE ACTIVE LAYER

Suitable illumination drives reactions at an exposed photocatalytic surface.

2 SURFACE DEPOSITS ARE ALTERED

Some organic deposits can be oxidised. The extent depends on the coating, contamination and exposure.

3 WATER HELPS REMOVE LOOSENED MATERIAL

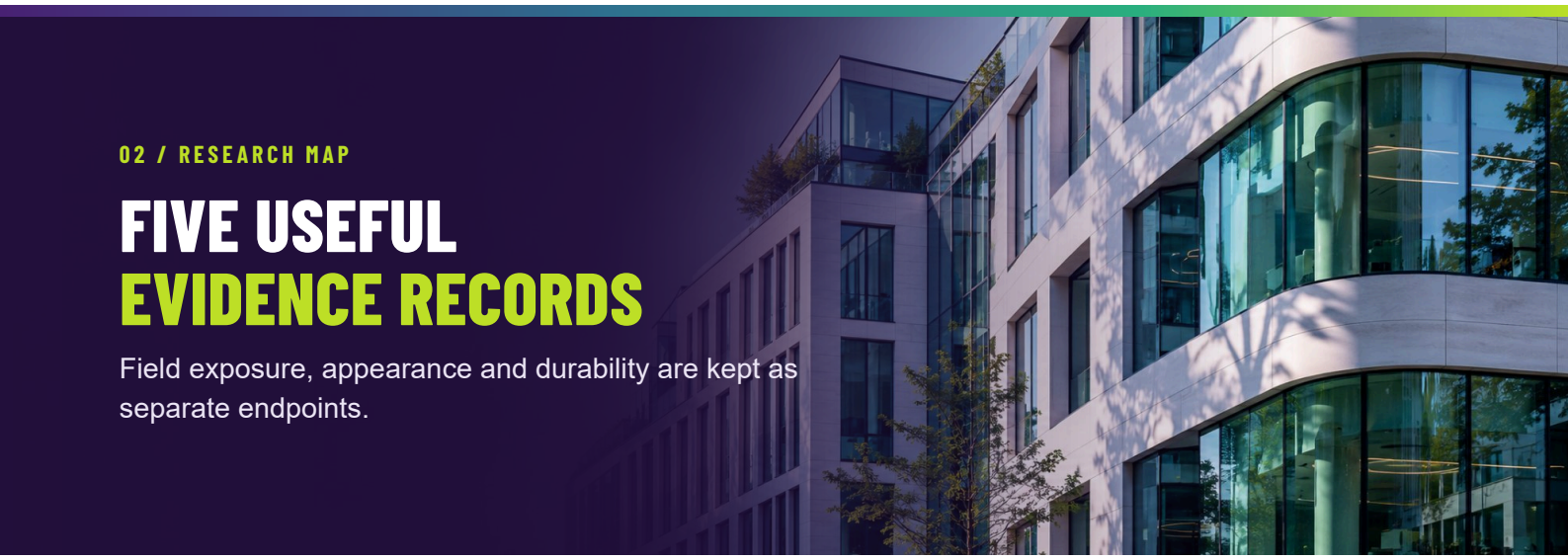
Changes in wetting can assist water spreading and washing. Rain access, drainage and surface angle matter.

Scientific basis: the glass and façade studies.[1–3] The operating light range and performance of a particular NTD formulation are set out in its product specification.

EVIDENCE IDENTITY

The studies used the researchers' own materials and provide independent technical background. Watch Water's own test reports are the basis for NTD-specific performance figures.

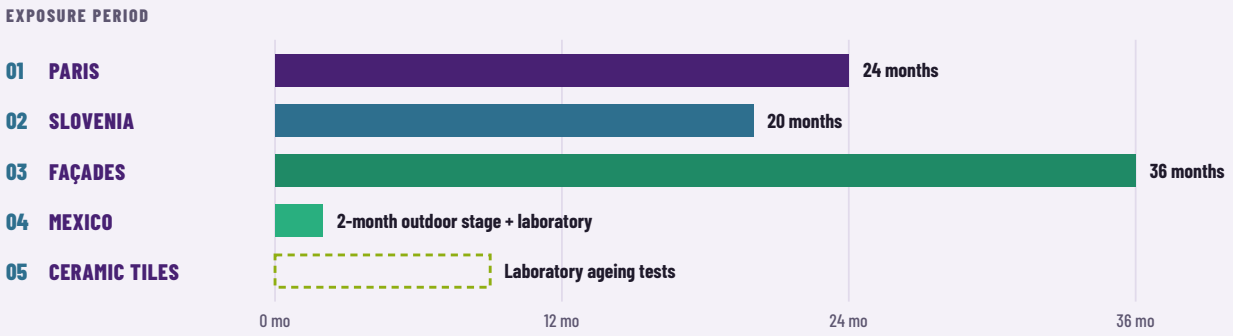
Light-responsive. Water-assisted. Built for lasting clarity.



02 / RESEARCH MAP

FIVE USEFUL EVIDENCE RECORDS

Field exposure, appearance and durability are kept as separate endpoints.



RECORD / SETTING	WHAT WAS MEASURED	PRACTICAL RELEVANCE
01 | Paris, 24 months	Deposits, haze and weathering on glass	Organic soiling and long-term optical quality
02 | Slovenia, 20 months	Outdoor cleaning and anti-fogging	Separate performance claims; assess angle and weather
03 | Façades, 36 months	Colour change and maintenance	Track appearance and real cleaning effort
04 | Mexico, outdoor + laboratory	Stain fading on coating mortars	Match the formulation to light and substrate
05 | Ceramic tiles, laboratory	Surface response after ageing	Balance initial activity with abrasion resistance

HOW TO READ THE CASE STUDIES

Each record states what was tested, what the researchers found, the interpretation limit and a practical lesson for NTD. The proposed NTD uses are Watch Water's technical conclusions from the research; the research sites used the researchers' own materials.

FIVE SETTINGS. ONE DISCIPLINE.

Measure each benefit separately: cleaning, clarity, appearance and durability.



01 CASE STUDY
OUTDOOR FIELD STUDY

PARIS: TWO YEARS OF URBAN GLASS EXPOSURE

WHAT WAS TESTED

Two industrial photocatalytic glasses and ordinary float glass were exposed in Paris under sheltered and unsheltered conditions. Researchers measured deposits, optical haze and surface weathering.

REPORTED RESULT

The coated glass accumulated a smaller organic fraction in its deposits. Surface weathering remained moderate after two years. The study supports a real outdoor cleaning mechanism, rather than relying only on a laboratory dye test.

INTERPRETATION

This did not establish complete removal of mineral dust, salts or every visible deposit. Performance of factory-coated glass cannot be assumed for a separately applied coating.

STUDY PROFILE

SETTING
Paris, sheltered and unsheltered

PUBLISHED
2008

EXPOSURE
24 months

MATERIAL
Factory-coated glass

ENDPOINTS
Deposits · haze · weathering

PRACTICAL LESSON FOR NTD

For NTD glass applications, measure both organic-soiling reduction and optical quality, with matched exposure and cleaning records.

SOURCE [1] Chabas et al. (2008). Behaviour of self-cleaning glass in urban atmosphere. Building and Environment 43, 2124-2131. doi.org/10.1016/j.buildenv.2007.12.008



02 CASE STUDY
OUTDOOR FIELD STUDY

SLOVENIA: FIELD CLEANING AND ANTI-FOGGING DIFFER

WHAT WAS TESTED

Researchers compared a zirconium-modified photocatalytic film, commercial self-cleaning glass and ordinary glass across three outdoor environments. Installation angle and weather were part of the assessment.

REPORTED RESULT

The tested coatings did not deliver a substantial overall self-cleaning benefit in the field, despite strong earlier laboratory activity. The experimental film did show a clear anti-fogging effect in laboratory and outdoor observations.

INTERPRETATION

Rainfall, sun exposure and inclination affected the outcome. Anti-fogging and self-cleaning are different properties and require separate measurements.

STUDY PROFILE

SETTING
Three outdoor environments

PUBLISHED
2019

EXPOSURE
20 months

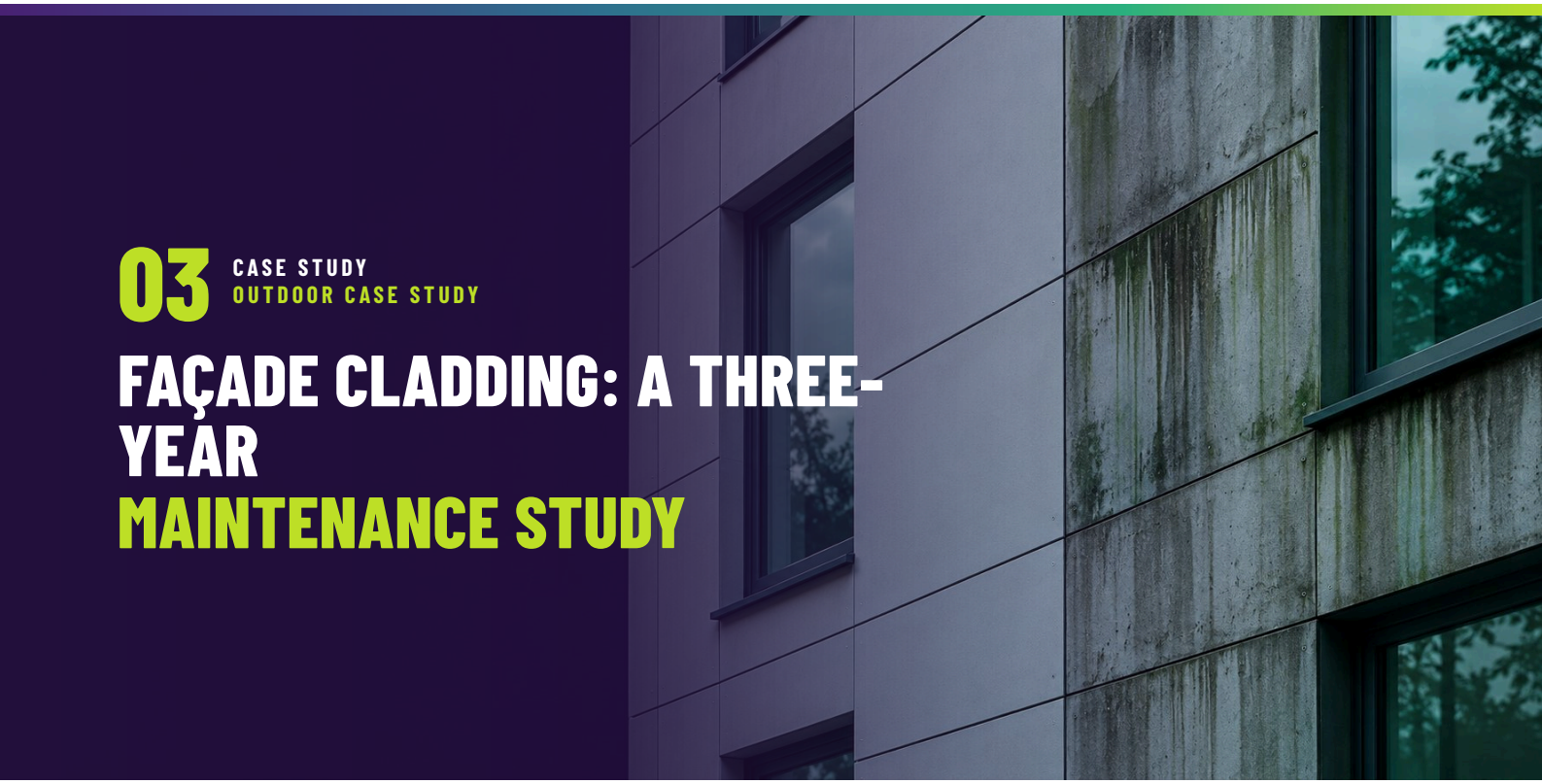
MATERIAL
Sprayed glass films and commercial active glass

ENDPOINTS
Self-cleaning · anti-fogging

PRACTICAL LESSON FOR NTD

Specify NTD performance by function: clarity, fogging behaviour, organic-soiling reduction and cleaning frequency. Include vertical and inclined glass in trials.

SOURCE [2] Field Test of Self-Cleaning Zr-Modified-TiO2-SiO2 Films on Glass with a Demonstration of Their Anti-Fogging Effect. Materials 12 (2019), 2196. doi.org/10.3390/ma12132196



03 CASE STUDY
OUTDOOR CASE STUDY

FAÇADE CLADDING: A THREE-YEAR MAINTENANCE STUDY

WHAT WAS TESTED

Andaloro and colleagues assessed sol-gel surface treatments on different opaque cladding materials. Laboratory wetting measurements preceded outdoor monitoring of colour change over three years.

REPORTED RESULT

The authors reported that treated façades could be easier to clean and could need cleaning less frequently. The work also identified exposure conditions as a factor in performance.

INTERPRETATION

The study does not provide one universal percentage for cleaning-cost savings or a guaranteed maintenance interval. Opaque cladding results do not establish glass transparency.

STUDY PROFILE

SETTING
Building façades, outdoor

PUBLISHED
2016

EXPOSURE
36 months

MATERIAL
Opaque façade cladding

ENDPOINTS
Wetting · colour change · cleaning

PRACTICAL LESSON FOR NTD

For NTD façade projects, document surface appearance and actual maintenance effort. Agree the appearance target with the building owner before application.

SOURCE [3] Andaloro, Mazzucchelli and Lucchini (2016). Photocatalytic self-cleaning coatings for building façade maintenance. Performance analysis through a case-study application. Journal of Facade Design and Engineering 4(3-4), 115-129. doi.org/10.7480/jfde.2016.4-3.1148



04 CASE STUDY
LABORATORY AND OUTDOOR STUDY

MEXICO: STAIN FADING IN A WARM, HUMID CLIMATE

WHAT WAS TESTED

Mortars containing different photocatalyst additions were tested against methyl-orange and red-wine stains under visible and ultraviolet illumination, followed by outdoor exposure in a warm sub-humid climate.

REPORTED RESULT

A 3% addition performed best among the tested 2%, 3% and 5% mixtures. The synthesized catalyst performed best under visible light, while the commercial comparator performed best under ultraviolet light.

INTERPRETATION

These were catalyst-containing mortar mixtures. Dye fading is an appearance endpoint and does not by itself prove complete conversion of the stain or the same behaviour for a sprayed finish.

STUDY PROFILE

SETTING
Laboratory, then warm sub-humid outdoor site

PUBLISHED
2023 / 2024 issue

EXPOSURE
Two-month outdoor stage

MATERIAL
Cement-based coating mortars

ENDPOINTS
Stain fading · visible and UV light

PRACTICAL LESSON FOR NTD

Test NTD on realistic stains under the intended lighting. Compare cleanability and colour recovery on each substrate rather than selecting a loading from this study.

SOURCE [4] Kuk-Dzul et al. Photocatalytic Activity and Self-Cleaning Effect of Coating Mortars with TiO2 Added: Practical Cases in Warm Sub-Humid Climates. Materials 17 (2024), 190; published December 2023. doi.org/10.3390/ma17010190



05 CASE STUDY
CONTROLLED DURABILITY STUDY

CERAMIC TILES: SURFACE ACTIVITY VERSUS ABRASION LIFE

WHAT WAS TESTED

Sciancalepore and Bondioli applied photocatalytic sol-gel coatings to industrial tiles and compared surfaces of different roughness before and after ageing tests.

REPORTED RESULT

Smoother surfaces showed greater photocatalytic activity and faster development of water-spreading behaviour. However, their coatings were less resistant to abrasion than coatings on the matt surface.

INTERPRETATION

The best initial surface response was not automatically the most durable result. This study assessed coating properties, not a guaranteed service life under all cleaning regimes.

STUDY PROFILE

SETTING
Laboratory ageing tests

PUBLISHED
2014 online / 2015 issue

EXPOSURE
Accelerated ageing

MATERIAL
Industrial ceramic tiles

ENDPOINTS
Activity · wetting · abrasion

PRACTICAL LESSON FOR NTD

Match NTD formulation and application to the finish. Include repeated wiping and abrasion when selecting a coating for high-contact surfaces.

SOURCE [5] Sciancalepore and Bondioli. Durability of SiO2-TiO2 Photocatalytic Coatings on Ceramic Tiles. International Journal of Applied Ceramic Technology 12(3) (2015), 679-684. doi.org/10.1111/ijac.12240

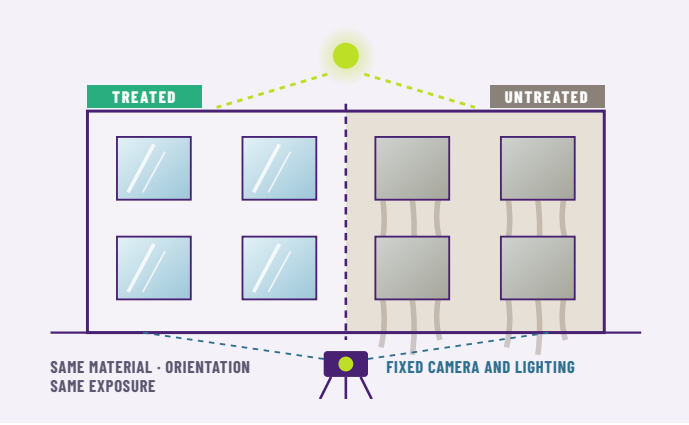
03 / NTD APPLICATION FRAMEWORK

MATCH THE FINISH TO THE SURFACE

Assessment priorities for Watch Water® LonGeVity-Purity.

APPLICATION	PERFORMANCE TO RECORD	PRACTICAL CONDITION
GLASS AND GLAZING	Haze, light transmission, spotting, cleaning effort	Check visible clarity, drainage and installation angle
OPAQUE FAÇADES	Colour stability, stain removal, time between cleans	Include sheltered and exposed areas
MINERAL AND CEMENT FINISHES	Adhesion, water uptake, appearance after staining	Check porosity and the existing finish
CERAMIC SURFACES	Wetting, cleaning response, abrasion resistance	Test both polished and matt finishes
OTHER SUBSTRATES	Finish compatibility and ageing performance	Establish separate evidence for each material

A USEFUL NTD FIELD COMPARISON



- Adjacent treated and untreated areas of the same material, with the same orientation and exposure.
- Record the NTD batch, preparation, application quantity and curing conditions.
- Photographs with fixed lighting and camera position.
- Log cleaning time, water use and appearance at defined intervals.



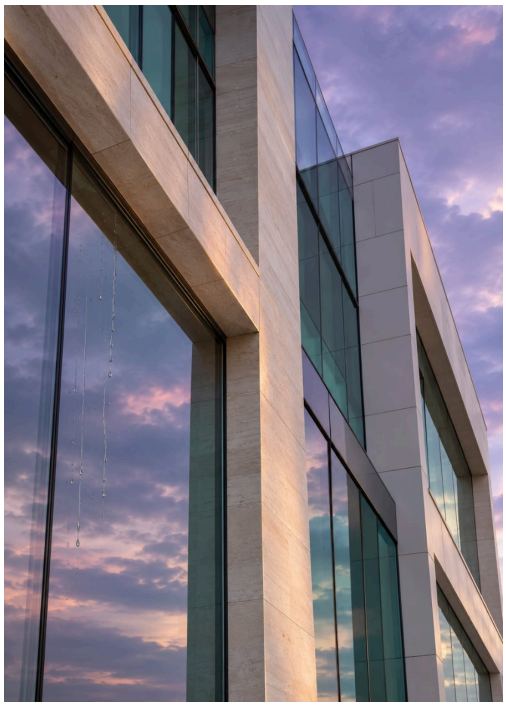
MEASURE THE BENEFIT THE CUSTOMER RECEIVES.

A practical maintenance claim should be supported by cleaner appearance, retained optical quality or a measured reduction in cleaning effort. A short laboratory response alone does not establish a service-life guarantee.

This assessment framework is a Watch Water application plan, informed by the five records. Dilution, dose, curing period and reapplication interval are given in the applicable NTD technical instructions.

04 / PRODUCT AND SOURCE RECORD

LonGeVity-Purity NTD



NTD - exclusively manufactured by Watch Water®.

Surface-treatment technology for LonGeVity-Purity, focused on clean appearance, material compatibility and measurable maintenance performance.

A CLEAR TECHNICAL FOUNDATION

The published literature supports investigating light-responsive coatings for surface-cleaning and maintenance applications. Field results also show why performance must be matched to the finish, illumination, weather and wear. NTD documentation builds on these lessons while presenting Watch Water's own measured results under their stated test conditions.

PUBLICATION REGISTER

[1] Chabas et al. (2008). Behaviour of self-cleaning glass in urban atmosphere. Building and Environment 43, 2124-2131. https://doi.org/10.1016/j.buildenv.2007.12.008

[2] Field Test of Self-Cleaning Zr-Modified-TiO2-SiO2 Films on Glass with a Demonstration of Their Anti-Fogging Effect. Materials 12 (2019), 2196. https://doi.org/10.3390/ma12132196

[3] Andaloro, Mazzucchelli and Lucchini (2016). Photocatalytic self-cleaning coatings for building façade maintenance. Performance analysis through a case-study application. Journal of Facade Design and Engineering 4(3-4), 115-129. https://doi.org/10.7480/jfde.2016.4-3.1148

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[5] Sciancalepore and Bondioli. Durability of SiO2-TiO2 Photocatalytic Coatings on Ceramic Tiles. International Journal of Applied Ceramic Technology 12(3) (2015), 679-684. https://doi.org/10.1111/ijac.12240

Research titles retain the original scientific terminology so that each publication can be located and checked. NTD is used for the Watch Water product. No affiliation or endorsement by the cited researchers is implied.

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