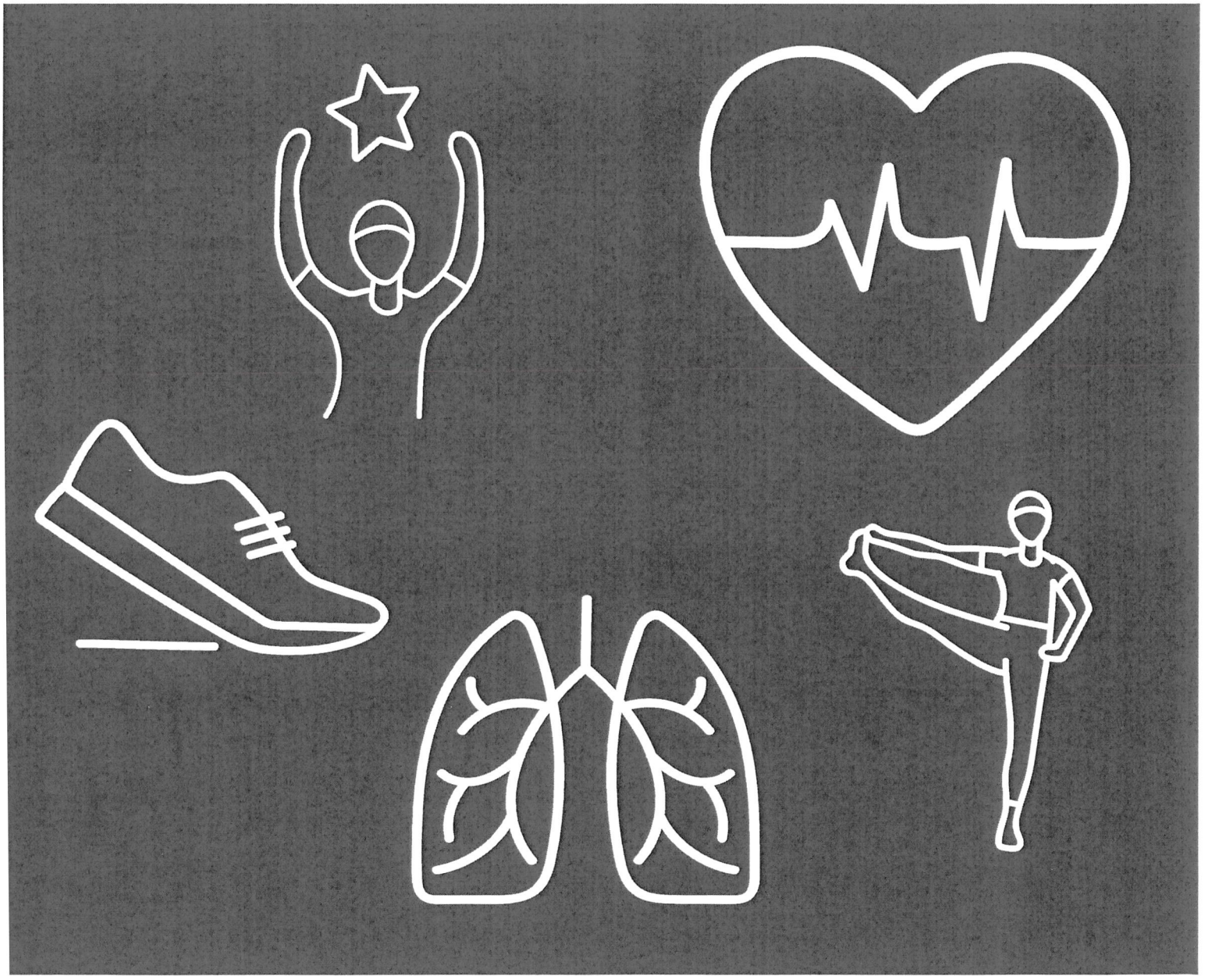
BIDBOOK NOORDWIJK

Van badplaats naar heilzame zeebadplaats



MAART 2020

gemeente Noordwijk

ESPA
EUROPEAN SPAS ASSOCIATION

Van badplaats naar
heilzame zeebadplaats

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BALNEOLOGICAL REPORT – SEA WATER IN NOORDWIJK

Location: Noordwijk, South Holland, Netherlands
Sea water chemical and physical analysis: SGS Institut Fresenius, Taunusstein, Germany
Date and place of water sampling: 11/10/2018, Noordwijk
Number of sample: 181011605
Date of results protocol: 6/2/2019
Number of protokol: 4159907

According the results of the chemical and physical analysis we can label sea water in Noorwijk as high mineralised water, cold, hypertonic, slightly alkaline, natrium-chloride, fluoride water, with high content of cations: natrium, magnesium, calcium and kalium, higher content of anions: chlorids, sulphates and fluorids. Water can be sign also as BRINE/SALTY WATER.

MAIN CHARECTERISTICS OF THE WATER

Temperature

Temperature of the water in day of sampling was 14,7°C (11th October 2018). The temperature ranges during the year from 4,8°C in February up to 19.8°C in the August. The average water temperature throughout the year was 11°C. Temperature suitable for direct bathing in the sea is in the place whole year. Optimal temperature for whole body bathing and swimming for untrained people is from mid Juni to the end of September, in the rest of the year for watering, wiping and wading to promote imunity and in hardening program. So cold winter swimming – "ice bear swimming" only for trained people, or people starting with hardening under control of proffesionals. Swimming in very cold "ice" water is a very effective method, usually combined with a short run. It significantly promotes blood circulation in the body, stabilizes blood circulation and activates the immune system. However, necessary avoid excessive strain when swimming in extremely cold water.

Sea water from location can be used after heating in indoor tubs or pools for bath without physical activity in temperature 37–40°C, for hydrokinesiotherapy in temperature 30–34°C and for physical activities (swimming, cycling in water...) in temperature 26–30°C. The special treatment of the water in pools because of hygienic safety is necessary.

Total mineralisation

Total mineralisation of analysed water is 30 973 mg/l, it means 3% salt solution with predominance of NaCl salt (app. 75%), other salts $MgCl_2$, $MgSO_4$, $CaSO_4$, $K2SO_4$ are also occuring. Very important for sea water bathing is high content of magnesium salts in water (app. 15% in evaluated water).

Dominant cations

In the evaluated water is natrium (Na^+) 9460 mg/l – from all cations it represents 77,21 meq%. Other very important cation is magnesium (Mg^{2+}) in content 1150 mg/l from all cations it represents 17,75 meq%. Magnesium salts are known to bind water in the skin, influence epidermal proliferation and differentiation, and enhance permeability barrier repair. Bathing in the sea water significantly improve skin barrier function compared with the tap water. In many studies was determined evidence of improvement in skin hydratation, reduced skin roughness and redness (markers of inflammation). Healing antiinflamatory and antiallergic effect of calcium Ca^{2+}(346 mg/l) can be applied in form of aerosolotherapy direct in seashore, or by using inhalation apparatus.

Dominant anions

In the water are chlorids (Cl^-) in content 17 100 mg/l what is 90,47 meq% from all anions. There is also higher

content is of sulphates ($SO_4$2-) 2320 mg/l that is 9, 06 meq% from all cations. Higher content of Fluorid (F-) as curative effect can be applied only in drinking cure. Iodine anions in evaluated location is in very low concentration.

Comment: microbiological analysis was not added to the report of SGS.

POSSIBLE THRAPIES BASED ON THE USE OF SEA WATER

- Whole body baths/partial baths,
- Hydrokinesiotherapy - excercise in the water,
- Whole body and partial showers,
- Foot baths, wading in the water (also ford after Kneipp),
- Watering, compresses, wipes,
- Lavage of body cavities, gargling (nasal, mouth),
- Individual inhalation therapy by inhaler apparatus,
- Group inhalation therapy by inhaler apparatus,
- The natural aerosoltherapy on the coast,
- Step by step hardening by the cold sea water.

BATHS in THE sea water

According to Menger and Mantel (1978) temperature of sea water that can be used for bathing can be recognized as:

- cold 16-17,9°C
- medium warm 18-19,9°C
- warm 20-21,9°C
- very warm > 22°C

The bath time for not trained people depends on thickness of subcutaneous fat.

WATER TEMPERATURE IN °C	THICKNESS OF SUBCUTANEOUS FAT		
	LOW	NORMAL	HIGH
16-20	5 minutes	10 minutes	15 minutes
20-22	10 minutes	15 minutes	20 minutes
22-25	15 minutes	20 minutes	25 minutes

Using salty sea bath, used especially for skin diseases, belongs to the oldest historically documented medical procedures (Hippocrates). Many experimental and clinical studies of recent years however demonstrated, that this positive effect is not only linked with the content of NaCl, but above all, to the high concentration of magnesium ions, which are effective in the treatment of inflammatory skin diseases (also allergic origin), by suppressing inflammatory and hypersensitivity reaction. Scientific studies have confirmed the positive effects in treatment of psoriasis vulgaris, acne vulgaris, parapsoriasis, neurodermatitis, pityriasis versicolor, ichthyosis and allergic eczemas.

Positive anti-inflammatory effect of the bath in brine with a high content of magnesium is explained by competitive displacement of calcium ions from binding with specific proteins. Enzyme activity, which requires calcium ions as co-factors, is this way by high concentration of magnesium in the skin inhibited (phospholipase A2, epidermal lipoxygenases). Low activity of these enzymes subsequently leads to inhibition of pro-inflammatory factors. After application of brine with a high content of magnesium also immunosuppressive effect on epidermal Langerhans cells, which have a key role in etiopathogenesis of psoriasis and atopic eczema, was demonstrated.

The positive effect of brine applications with a high content of magnesium can synergistically be increased by simultaneous (or subsequent) application of UVB radiation. In the locality Noordwijk allows direct bath in sea water, followed by graduate exposure of the skin

to sunlight (natural balneophototherapy). There is also possibility to use indoor application of bath with sea water in a shallow tub, or in a pool, which only wets the skin, with simultaneous application of the selective UVB rays with a maximum energy emitted in a narrow range of 311–313 nm.

When using natural heliotherapy or treatment with UVB lamp, the type of skin pigmentation should always be taken into account, and radiation dose can only be gradually increased.

In many coastal countries is sea water used for external balneotherapy, as hypothermal, after heating up as isothermal or hyperthermal bath in the pool or in the tub. Heating up of sea water significantly expands the indication spectrum and removes seasonality of thalassotherapy.

Scientific studies have produced positive results also in the treatment of musculoskeletal diseases, particularly inflammatory rheumatic diseases and chronic degenerative diseases of the spine and joints.

In treating inflammatory gynecological diseases and fertility disorders, whole or half hyperthermal sitting baths in brine and vaginal brine applications are successfully applied. Studies show that brine irrigations are effective in treating fertility disorders, chronic salpingitis, postoperative infiltrates, post hysterectomy syndrome, adhesion-related complaints and etc.

Body Hardening

Body hardening means adaptation of the organism to the effects of adverse external stimuli (especially cold) and to increased physical load. To enhance the effect of cold hardening, supplement procedure with physical activity is suitable. In swimming in cold water increase the reactivity and flexibility of the blood vessels, which can than react quickly to the effects of cold. Proper hardening effectively strengthens immunity and also stress management and some psychological problems such as burnout syndrome.

The human body reacts to immersion in cold sea water with two basic phases:

1. **Phase** – phase of the first cooling (nerve-reflexive) is associated with a sudden cooling of the body, which is associated with vasoconstriction in the skin, parallel vasodilation of deeper stored blood vessels and increased blood flow to organs of the body. It slows down the heart rate and respiration, increases blood pressure. This phase is short (1–2 minutes) and by adapted individuals is not very apparent.
2. **Phase** – reactive is due to hyperemia manifested by feeling of warmth and redness of the skin. Increased chemical thermoregulation causes increased production of heat in the body. Breathing is faster, deepens, oxygen consumption is increased 2–3 times. By very long stay in the cold water the 3. phase – phase of the second cooling could also occur, which is a failure of thermoregulation. In the thalassotherapy is this third phase undesirable.

Bath in the sea, with a strong flow of air on the beach and sunlight has a role in improving the overall immunity of the body and in increasing of nonspecific resistance of the organism, manifested by:

- Improvement of immunological response,
- Improvement of thermoregulation,
- Normalization of some metabolic processes,
- Improvement of the function of various organs and so achieving economization or reduction of the claims for compensatory mechanisms.

Among treatments using sea water to harden body can also be included: walking in sea water under knees, wiping off limbs with seawater followed by massaging to skin redness, watering limbs with seawater, wiping and watering chest and neck.

The main indications for external balneotherapy with sea water

- **Skin diseases** (natural or isothermal temperature of the water) in combination with heliotherapy,
- **Gynecological disorders** (isothermal, hyperthermal bath),

high salt concentration, contained in sea water. Density of natural aerosol is increased by mechanical fragmentation of seawater on solid objects on the coast and also by wind that swirls water, raises waves which fragment on the coast. This natural aerosol is polydisperse, containing larger particles which affect mainly mucosa of the upper respiratory tract, but not reaching to the pulmonary alveoli. High content of sodium and calcium salts has anti-inflammatory effect, dilutes sputum and facilitates expectoration. Special barriers can be build on the shoreline to enhace amount and dispersity of natural aerosol.

AEROSOLOTHERAPY USING INHALER APPARATUS

Inhalation of sea water by inhaler (the compressor, or ultrasonic inhalers) enables to produce dense monodisperse aerosol that can reach also into the lower respiratory tract, where liquefies thick sputum and has anti-inflammatory effect. Water for this type of aerosolotherapy must be microbiollogicaly analysed!

To the sea water used for aerosoltherapy, some pharmaceutics can be added: for regeneration of cilia of respiratory mucosa, expectorants, vitamins, bronchodilators and other. In case of sinusitis a vibrating aerosol is administered.

Warning: cold aerosolotherapy may provoke bronchospasm, therefore esp. For clients with astma, allergy and CHOPD isothermal inhalation is recommended. For patients with asthma attacks, by individual inhalation by inhaler, is recommended to dilute sea water to 1, 5 – 2% salt concentration.

The main indications for aerosolotherapy by inhaler with sea water (isothermal temperature)

- Chronic inflammations of upper respiratory tract,
- Chronic bronchitis,
- Chronic obstructive pulmonary disease (CHOPD),
- Astma bronchiale,
- Conditions after lung surgery,
- Conditions after upper respiratory tract surgery,
- Silicosis and other pneumoconiosis,
- Chronic sinusitis,
- Preventative cure for people working in dusty environments.

CONCLUSION

The climate in the locality Noordwijk is a seaside climate, with a slight tonic effect. The tonic effect of climate conditions is linked with increased intensity of global solar radiation, increased airflow and higher number of negatively charged ions in the air as in mainland.

CLIMATIC CONDITIONS IN THE LOCALITY MAY BE RECOGNISED AS HEALING BIOCLIMATE, AND TOWN NOORDWIJK AS CLIMATIC HEALTH RESORT

NOORDWIJK AS SEA HEALTH RESORT ON THE DUTCH COST THALASSOTHERAPY -

basic prerequisite for building a destination Noordwijk as a important health center

Thalassotherapy covers wide range of curative and preventive use of natural healing resources occuring in sea locations – sea water, bioclimatic conditions on the sea shore and some marine products as mud, sand, algae etc.

After the iniciative of European Spas Association to provide uniform definition also for thalassotherapy in order to garantee high quality standards and to established the term and brand name was prepared

Definition and Criteria of ESPA for thalassotherapy

in 2002 by expert group of German Spas Association (headed by prof. Dr. Stick and Dr Harms) and after discussion in the 1st Thalassotherapy international conference in Rostock in January 2002 was published. The term thalassotherapy shall be used only if the following definitions and prerequisites are met and the following measures are offered or taken:

Definition

Thalassotherapy is an integrated plan for therapy, prevention and health promotion. The plan shall be implemented for defined indications under medical care and with the participation of qualified expert staff.

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INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH · Postfach 1261 · 65220 Taunusstein

Gemeinde Noordwijk
Voorstaat 42
2201 HW Noordwijk

Auftrags-Nr. 4848852

Jutta Koch/ YW
Tel. +49 6128/744 - 770
jutta.koch@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Im Maisel 14
65232 Taunusstein

Taunusstein, 30.01.2019

Begutachtung

Heilwasser - Meerwasser

Nordseewasser von Noordwijk

Dem Auftrag von VITA-CON, Consultancy BV, Kunden-Nr. 10175478, Frau Marlies Sobczak – Boumans, Projektleiterin im Auftrag von Stichting Noordwijk Marketing entsprechend, wurde von SGS INSTITUT FRESENIUS, Taunusstein, eine "Meerwasseranalyse" des Nordseewassers in Noordwijk durchgeführt.

Analyse und Beurteilung orientieren sich nach den in Deutschland gültigen Kriterien:

Begriffsbestimmungen – Qualitätsstandards für Heilbäder und Kurorte, Luftkurorte, Erholungsorte – einschließlich der Prädikatisierungsvoraussetzungen, sowie für Heilbrunnen und Heilquellen - 13.Auflage - Ausgabe November 2017
Teil B „Natürliche Heilmittel des Meeres" Nr.2 Meerwasserwasseranalyse in Form der Bezugsanalyse bzw. Wiederholungsanalyse

Mineral- und Tafelwasserverordnung vom 1. August 1984 in der Fassung vom 22. Oktober 2014
Anlage 4 (zu § 6a Abs. 1) und § 4 Abs. 1 und 2

1. Allgemeine Angaben

Auftragsabwicklung inkl. Probenahme erfolgte über:

Dr. Kurt von Storch - STORCH Water Consulting International, Stolberger Str. 25 in Wiesbaden

Kundennummer:	10120465
Auftragsnummer:	4714266
Probennummer:	181011605

Datum der Probenahme und der örtlichen Messungen

Entnommen von Dr. Kurt von Storch am 11.10.2018

Witterungsverhältnisse zur Zeit der Probenahme

Heiter, bewölkt

Entnahmestelle

Die Entnahmestelle der Meerwasserprobe liegt ca. 2 km von Strand entfernt. Der Weg zur Entnahmestelle erfolgte mittels Motorboot. Die Probenahme für die Analytik erfolgte mit Hilfe einer Schöpfstange.

Koordinaten der Entnahmestelle

52°16´16´´N
4°23´53´´O
Höhe über NN: 0 Meter

2. Beurteilung und Charakteristik

Die Untersuchungen wurden von SGS INSTITUT FRESENIUS, Taunusstein, nach den in den Prüfberichten angegebenen Methoden, angepasst an die jeweilige Matrix, durchgeführt. Dabei wurden die im Prüfbericht enthaltenen physikalischen, physikalisch-chemischen und chemischen Ergebnisse (Anlage) erhalten. Die zugehörige Ionenbilanz ist in der Anlage enthalten.

Nach der von SGS INSTITUT FRESENIUS, Taunusstein, durchgeführten "Heilwasseranalyse" weist das Meerwasser einen Gehalt an gelösten Mineralstoffen von 30973 mg/l auf. Das Wasser kann daher nach den "Begriffsbestimmungen" bezüglich der chemischen Beschaffenheit als "Heilwasser" bezeichnet werden.

Bei den Kationen ist

Natrium mit 77,21 % Äquivalentanteil

und bei den Anionen ist

Chlorid mit 90,47 % Äquivalentanteil

zur Kennzeichnung heranzuziehen.

Die in den Begriffsbestimmungen geforderten Mindest-Äquivalentkonzentrationen für Natrium und Chlorid von je 240 mmol/l (240 meq/l) werden weit überschritten. Das Meerwasser kann daher als

"Sole"

bezeichnet werden.

Neben dem Hauptbestandteil Natrium kommen bei den Kationen noch deutliche Mengen an Magnesium, geringe Mengen an Kalium und Calcium, Spuren von Strontium und geringe Spuren von Lithium vor.

Bei den anorganischen Stickstoffverbindungen liegen geringe Spuren von Ammonium und Nitrit vor. Nitrat konnte nicht nachgewiesen werden.

Mangan und Eisen liegen in geringen Spuren vor.

Neben dem Hauptbestandteil Chlorid kommen bei den Anionen noch deutliche Mengen von Sulfat, geringere Mengen von Hydrogencarbonat und Bromid, geringe Mengen von Fluorid sowie Spuren von Iodid und Hydrogenphosphat vor.

Da der Mindestgehalt von 1 mg/l an Fluorid erreicht wird, kann das Wasser als

"fluoridhaltig"

bezeichnet werden.

Bei den undissoziierten Stoffen liegen Bor- und Kieselsäure in einem üblichen Bereich.

Zum Zeitpunkt der Probenahme betrug die Wassertemperatur des Meerwassers an der Probenahmestelle 14,2 °C.

Die nachfolgend aufgeführten Grenzwerte an besonders wirksamen Bestandteilen werden vom Meerwasser nicht erreicht, so dass eine entsprechende Kennzeichnung nicht möglich ist:

a)	eisenhaltige Wässer	20 mg/l Eisen
b)	schwefelhaltige Wässer	1 mg/l Sulfidschwefel
c)	radonhaltige Wässer	666 Bq/l (=18 nCi/l) Radon-222
d)	iodhaltige Wässer	1 mg/l Iod
e)	Säuerlinge	1000 mg/l freies gelöstes Kohlenstoffdioxid für Trinkzwecke
		500 mg/l freies gelöstes Kohlenstoffdioxid für Badezwecke

Das Meerwasser enthält einige Spurenelemente in geringen Konzentrationen. Zulässige Grenzwerte für Substanzen nach Anlage 4 der Mineral- und Tafelwasser-Verordnung, werden nicht erreicht oder überschritten.

Der Gehalt an organischen Stoffen, gekennzeichnet durch die Summenparameter der spektralen Absorptionskoeffizienten bei 436 nm und 254 nm und des gelösten organisch gebundenen Kohlenstoffs liegen in einem üblichen Bereich. Cyanide und Schwefelwasserstoff konnten nicht nachgewiesen werden.

SGS INSTITUT FRESENIUS GmbH

iV. Jutta Koch
Customer Service Senior Consultant Beverages

i.A. Yvonne Wolf
Customer Service Consultant Beverages

Diesem Schreiben liegen als Anlagen bei:

Prüfbericht Meerwasser 4159907 (chemische und chemisch-physikalische Untersuchungen)