Regulation of Plumbing Products in North America

北美飲用水產品法規

September 2016

Dave Purkiss
NSF International

Agenda
日程

Regulations 法規

- **National, State/Provincial, Plumbing Codes**
  國家， 州/省，管道標準

Standards 標準

- **ASME, CSA, NSF**

California Proposition 65 加州65提案
California Energy Commission 加州能源委員會
US EPA WaterSense 美國環保署 **WaterSense**

Drinking Water Regulations in USA
美國飲用水法規

- US EPA
  - Regulate Public Water Systems 公共飲用水系統法規
  - National Drinking Water Standards 國家飲用水標準

- US States
  - Responsible for Enforcing Federal Regulations
    負責執行聯邦法規
  - Can impose stricter/additional regulations
    實施更嚴格/額外的法規
  - Many regulate private wells 規範眾多私人開發水井
  - Some regulate plumbing products 規範管道類產品

Regulation of Drinking Water Products
飲用水產品的法規

- National 國家
  - US Safe Drinking Water Act 美國安全飲用水法
- State 州
  - Regulation of treatment chemicals and water works components 監管化學品處理劑和水工程元件
  - Many regulate plumbing products 規範眾多管道類產品
- Counties and Cities 縣，城市
  - Many regulate plumbing products 規範眾多管道類產品

USA National Requirements
美國國家要求

- Requires all products used within the U.S. to contain no more than 0.25% weighted average lead for pipes, fittings, and other components.

  管道，管件和其他部件的加權平均鉛含量不能超過0.25%。

- Requires all solders and flux sold for drinking water applications to contain no more than 0.2% lead.

  所有用於飲用水輸配管道上的焊劑的鉛含量不能超過0.2%。

Model Plumbing Codes in USA
美國管道規範

- IPC (International Plumbing Code) is written by ICC (International Code Council)

  IPC（國際管道規範）由ICC（國際規範委員會）編寫。

- UPC (Uniform Plumbing Code) is written by IAPMO (International Association of Plumbing and Mechanical Officials).

  UPC（統一管道規範）由IAPMO編寫。

- Both reference many product standards including NSF 61 and 372.

  上述2個規範參考了很多產品標準，其中包括NSF 61和NSF 372 。

Plumbing Codes Refer to Product Standards
管道規範參考產品標準

Both the IPC and the UPC plumbing codes refer to standards.

Examples of standards REQUIRED by the plumbing codes are:

IPC和UPC會引用其他標準。 如：

- Faucets - certification required to NSF/ANSI Standard 61 and ASME A112.18.1/CSA B125.1

  水龍頭---需要NSF/ANSI 61和ASME A112.18.1/CSA B125.1認證

Canada
加拿大

- Health Canada – administers drinking water in Canada

  加拿大衛生部-----監管加拿大的飲用水
- Provinces and Territories – Regulate municipal water and plumbing products.

  省份與地區---監管市政用水及管道類產品
- National Plumbing Code – (NPC) is one plumbing code for Canada – references standards.

  加拿大國家管道規範--- (NPC)是加拿大的管道規範

Standards
標準

- Standards contain the requirements for products.
  標準包含了對產品的要求
- Common standards for drinking water plumbing products:
  飲用水管道產品常見標準如下：
  - ASME (American Society Mechanical Engineers）
    美國機械工程師協會
  - CSA (Canadian Standards Association)
    加拿大標準協會
  - NSF (National Sanitation Foundation)
    NSF

Standards
標準

Mechanical Requirements 機械性能要求

– ASME (American Society Mechanical Engineers)
– CSA (Canadian Standards Association)

Material Requirements 材料安全要求

– NSF (National Sanitation Foundation).

Harmonized Standards 統一標準

– ASME A112.18.1/CSA B125.1 - Plumbing Supply Fittings

ASME A112.18.1/CSA B125.1

1. Covers faucets, bath and shower supply fittings, shower heads, supply stops, drinking fountains….. 覆蓋水龍頭， 洗浴類產品，花灑，自動飲水器等

2. Design Requirements (pressure, dimensions…)
   Also requires compliance to materials requirements of NSF 61 and NSF 372.
   設計要求（承壓， 尺寸 …）
   同時需要符合NSF 61和NSF 372中對材料的要求。

3. Performance tests (pressure, temperature, flow rate, life cycle test…)
   性能測試（承壓， 溫度，流速，壽命週期測試…）。

4. Markings, packaging and installation instructions.
   標識， 包裝和使用說明書。

NSF Services
NSF服務

NSF can provide testing and certification to ASME, CSA, ASSE and a wide variety of plumbing product standards.

NSF能夠提供ASME,CSA，ASSE和各種管道產品標準的測試和認證。

NSF has laboratories in:NSF的實驗室位於

- Shanghai
- Ann Arbor, USA
- Wales, UK

NSF also can authorize manufacturer’s laboratories to conduct testing.

NSF同樣可以授權給製造商的實驗室進行測試。

Several Water Conservation Programs Flowrate Requirements
流量要求

1. US Department of Energy (DOE) establishes flow rate requirements and are equivalent to ASME A112/18.1/CSA B125.1 standard. Mandatory National Law.

   美國能源部（DOE）提出流量要求，並等同於ASME A112/18.1/CSA B125.1標準中的要求。強制性國家法律。

2. US EPA WaterSense lower flow rate requirements than DOE.Voluntary program.

   US EPA WaterSense對流量的要求較DOE低。自願性項目。

3. California Energy Commission (CEC) established very strict low flow rate requirements for products sold in CA.

   加州能源委員會CEC對銷往加州的產品設立了非常嚴苛的流量要求。

DOE, WaterSense, CEC

Required flow Rates (gpm)				
Product	DOE	CEC	WS	ASME/CSA
Residential Kitchen	2.2	1.8	n/a	2.2
Residential lavatory	2.2	1.2[b]	1.5	2.2
Public lavatory	0.5	0.5	n/a	0.5
Metering Faucet	0.25/cycle	0.25/cycle	n/a	0.25/cycle
Pre-rinse Spray valves	1.6	1.6	1.28	1.6
Showerheads	2.5	2.0[a]	2.0	2.5

a: change to 1.8 in 2018
b: implemented 1 July 2016 Previous 1.5

WaterSense

- WaterSense, a partnership program by the U.S. EPA, seeks to protect the future of USA water supply by offering people a simple way to use less water with water-efficient products, new homes, and services.

  WaterSense， 是美國EPA管理並推動的一個專案，旨在給民眾提供一種簡單的方式----通過使用更高效節水的廚衛產品，説明改進家庭及公用設施節水效率，從而實現保護水資源的目的。

- WaterSense covers:　WaterSense 涵蓋了
  - Tank type toilets　- Pre-rinse spray valve 槽式廁所-預沖洗噴霧閥
  - Lavatory faucets　-Irrigation controllers WB--面盆水龍頭-沖洗控制器
  - Flushing urinals 沖洗小便池
  - Flushometer valves 沖洗閥
  - Showerheads 花灑

WaterSense Process

- The product manufacturer enters into a WaterSense partnership agreement with EPA.
  Manufacturers can sign a WaterSense partnership agreement with EPA once a draft specification has been released for a product they produce/carry or manufacture under a private label. Under the partnership agreement, manufacturers will have 12 months to obtain certification of a product that conforms to a relevant WaterSense specification.

  製造商與EPA簽訂關於WaterSense的協議。

  一旦產品通過規範草案，即可向EPA申請Watersense並打上相應標識。Watersense證書有效期為12個月。

WaterSense Process

- Have the product certified for conformance to the WaterSense specification by an EPA licensed certifying body. Manufacturers apply directly to the licensed certifying body for certification and to obtain the WaterSense label.
- 產品需由一個被EPA認可的認證機構對WaterSense進行合規性認證。 製造商可以直接向認證機構提出申請並獲得WaterSense標籤。
  NSF is a licensed certifying body and can provide the necessary testing and certifications.
  NSF具有此認證資質，能夠提供必需的測試與認證。

California Energy Commission (CEC)
加州能源委員會

- CEC is a division of the California Natural Resources Agency. The Commission has responsibility for activities that include forecasting future energy needs, promoting energy efficiency through appliance and building standards, and supporting renewable energy technologies.

  CEC是加州自然資源局下的一個部門。委員會的職責包括預報未來能源需求，提高能源效率，制定標準及支援可再生能源技術。
- One of its prominent responsibilities is maintenance of the California Energy Code.

  其重要職責之一是維持加州能源法規。

Why is this important?
為何重要？

- Due to the severe prolonged drought conditions in California the Governor signed an executive order mandating state wide water use reductions.

  由於加州持續嚴重乾旱，州長簽署行政法令要求整個加州減少用水。

- The CEC has responded by lowering the maximum flow rate requirement in order to conserve water.

  CEC採用降低最大流速的方法，以達到節水的目的。

Fittings Impacted by Regulations
受法規影響的管件

- Plumbing Fittings, which are showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, tub spout diverters, and commercial pre-rinse spray valves.
- 管道管件，如花灑，台盆龍頭，廚房龍頭，計量龍頭，起泡器，洗滌池，浴盆噴嘴和商業沖洗噴霧閥。

- Commercial kitchen faucets are exempt.商用廚房水龍頭除外

- Water filter dispenser faucets are classified as a Kitchen faucet by CEC.

  根據CEC, 淨水器龍頭被歸為廚房水龍頭

New Standards for Plumbing Fittings and Fixtures and their Trigger Dates

Regulated water appliances in California under Title 20	Previous CA Title 20 Regulation	Effective date for this standard is September 1, 2015	Effective date for this standard is January 1, 2016	Effective date for this standard is July 1, 2016	Effective date for this standard is July 1, 2018	Comment
Showerhead	2.5 gpm at 80 psi			2.0 gpm at 80 psi	1.8 gpm at 80 psi	New tiered regulation.
Lavatory Faucet and aerator	2.2 gpm at 60 psi	1.5 gpm at 60 psi		1.2 gpm at 60 psi		New tiered regulation.
Public Lavatory Faucet	2.2 gpm at 60 psi		0.5 gpm at 60 psi			No sell through is permitted after January 1, 2016.
Kitchen (Sink) Faucet	2.2 gpm at 60 psi *		1.8 gpm, optional temporary flow of 2.2 gprm, at 60 psi			No sell through is permitted after January 1, 2016.
Non Wall Mount Urinal	0.5 gpf max.		0.5 gpf max.			CEC standard catch up to CA Health and Safety Code standard.
Wall Mounted Urinal	0.5 gfp max.		0.125 gpf max.			No sell through permitted after January 1, 2016.
Water Closet (Toilet)	1.28 gpf max.		1.28 gpf max.			No sell through permitted. Water closets sold or offered for sale on or after January 1, 2016, shall pass the Waste Extraction Test (Section 7.10) of ASME A112.19.2.

* Includes water dispenser faucets

Data source: CEC webinar 12-9-2015

Listing and Registration With CEC
CEC的列名與註冊

- Manufacturers whose products are sold in California must be registered with the CEC.
  在加州銷售產品的製造商必須在CEC登記註冊。

- Compliant products must be listed on the CEC Appliance Efficiency Database
  合規產品必須在CEC電器能效資料庫中列名。

- NSF can input data directly or manufacturer can enter into database.
  NSF可以直接輸入資料或者製造商也可錄入資料。

Listing and Registration With CEC
CEC的列名與註冊

- Reporting options:Report actual tested values or a higher that tested value that is within the requirements of Title 20.

  報告選項：報告實際測試值，或實測值與Title20要求中的高者。

  Example:the Maximum flow requirement is 1.5 gpm, the product tested at 1.25 gpm. Product can be listed and marked as 1.5 gpm as the tested value does not exceed the requirement.

  例如： 最高流速要求是1.5gpm，產品測試值是1.25gpm 。該產品的流速可列名為1.5gpm，未超過規定值。

Listing and Registration With CEC
CEC的列名與註冊

- Asterisk can be used in Model listing, in order to indicate those parts of the model number that are not relative to performance of the product.
- 型號列名中可以用上星號，以指出與產品性能無關的型號名部分

  Example: Coating, handle options, etc

  如：塗層，手柄種類等

- Bracketing options: The only allowable bracketing occurs with products in which the internal related flow paths are similar including the flow controller. Bracketing is utilized for non-performance aspects such as finish and style.
- 歸類：僅允許用於內部流道包括流量控制器相似的產品中。歸類用於非性能方面，如表面處理及款式。

Enforcement
實施

- Deadline: Lower flow rates for shower and lavatory faucets were effective July 1st 2016.

  生效：花灑及台盆龍頭低流速要求於2016年7月1日實施。
- Potential Fines. 潛在的罰款
- 4 levels of violations. 4種違規
- Manufacturer accountability. 廠商問責
- Product Labeling. 產品標籤
- Product must be posted on online database prior to sale. 產品在銷售前，需在資料庫中列名

NSF Services for CEC
NSF為CEC提供的服務

- Recognized and approved testing laboratory by the CEC.
- CEC認可並授權的實驗室。

- We offer testing for all plumbing fittings impacted by the CEC regulations.
- 我們提供所有管道管件CEC規定的測試。

- 30 day turn-around time for testing.
- 測試週期為30天。

- We have capability to register product on your behalf for CEC.
- 我們可以代表您去CEC註冊產品。

- We can also provide test reports for the manufacturer to upload to register on their own behalf.
- 我們還可以向製造商提供測試報告，尤其自行上傳並註冊

Material Requirements
材料要求

- NSF/ANSI 61 – Drinking Water System Components – Health Effects

  NSF/ANSI 61-飲用水系統部件—健康因素

- NSF/ANSI 372 – Drinking Water System Components – Lead Content

  NSF/ANSI 372-飲用水系統部件—鉛含量

- California Proposition 65 – establishes safe harbor levels for reproductive toxins and carcinogens.
  - Lead limited to 0.5ppb per day.

  加州65提案—設立可致生殖系統受損和可致癌的安全標準值
  - 鉛含量限值0.5ppb/天

NSF/ANSI Standard 61

Drinking Water System Components

– Health Effects 健康因素

- Covers health effects of materials in treatment and distribution equipment. 覆蓋所有在處理及輸配設備中的材料的健康因素
- Covers all products with drinking water contact from source to tap. 包括從水源到龍頭的所有產品
- Does not evaluate product performance. 不用於評估產品的性能
- Evaluates the amount of any contaminant added from a product to drinking water against health based criteria. 評估產品析出到飲用水中的所有污染物

NSF/ANSI Standard 61

- Covers all products with drinking water contact from source to tap. 包括從水源到龍頭的所有產品
- What contaminants migrate from product into water? 哪些污染物會析出到水中？
- Are contaminants below acceptable levels? 析出的污染物是否低於許可的標準？

Standard 61 Requirements
61標準要求

- Formulation disclosure by manufacturer.製造商提供配方
- Formulation review of product. 產品配方評估
- Extract contaminants from product into water. 產品中汙染物析出至水中
- Analyze extraction water for contaminants. 析出污染物分析
- Perform toxicology evaluation of contaminants. 毒理學評估
- Inspection of manufacturing facility. 工廠審核

NSF Standard 61

Formulation disclosures 提供配方

- Device 設備
  - List of all parts and materials 列出部件和材料
- Materials 材料
  - List of all ingredients and suppliers 列出所有原料和供應商
- Ingredients 原料
  - Additional formulation information may be required from the ingredient suppliers 可能會向原料供應商索取配方資訊

NSF Standard 61

Formulation Review 配方評估

- Review of product formulation to determine what contaminants may be added to drinking water.

  通過評估產品配方，確定哪些污染物可能會析出至飲用水中

  Development of a test plan for product/material.

  制定產品/材料的測試計畫

NSF Standard 61

Plant Audit 工廠審核

- Verification of components/materials/ingredients and supplier sources 驗證部件/材料/原料和供應商資訊
- Tour of plant location 工廠巡視
- Review of product labeling 產品標籤評審
- Review of production records 生產記錄評審
- Review quality assurance processes 品質控制過程評審
- Collect samples for testing 收集測試樣品

NSF Standard 61

Laboratory Testing 實驗室測試

- Products exposed to formulated exposure waters 產品浸泡在固定配方的試液中
- Exposure sequences vary by product: 多種形式的浸泡
- 1 hour for process media 過程介質浸泡1小時
- 5 days for storage tank coatings 塗層浸泡5天
- 17 days for most products 大部分產品浸泡17天
- 19 days for faucets 水龍頭浸泡19天

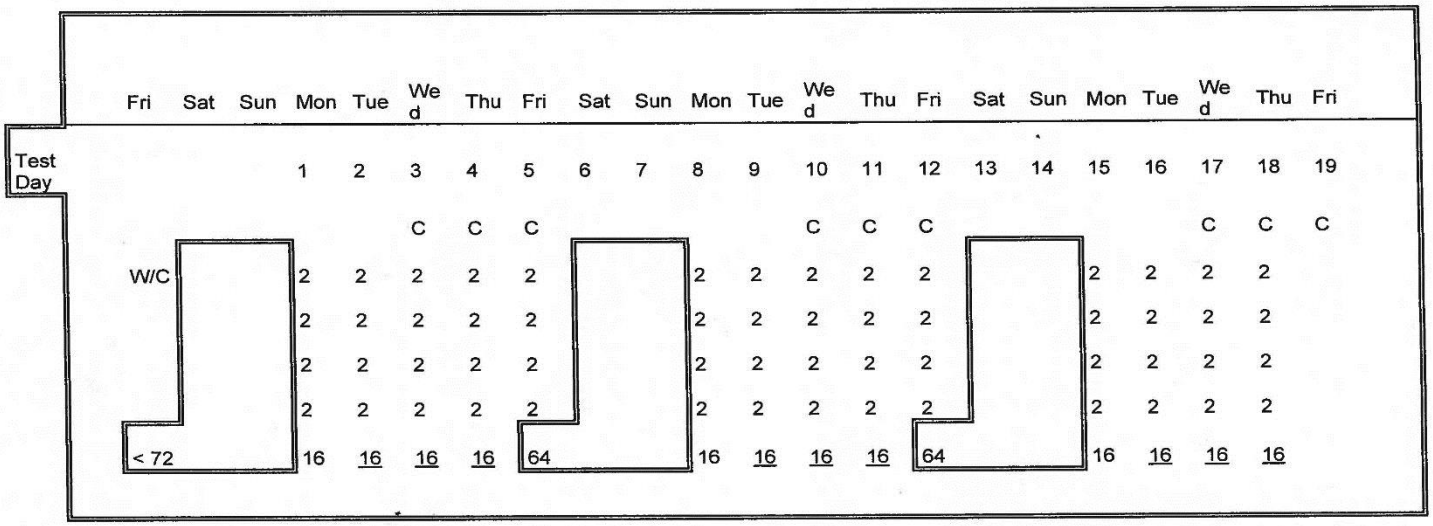
NSF Standard 61

Laboratory Testing 實驗室測試

- 19 day exposure for faucets 水龍頭浸泡19天
- Conditions: 23° C, pH 8浸泡：23° C, pH 8
- Devices are washed and conditioned prior to exposure. 暴露測試前，樣品會先經過清洗與浸泡
- Starts within 72h of conditioning period 72小時的浸泡過程
- Water changed every 2 hours, 4 x per day. 浸泡水每2小時更換一次，每天更換4次

– 16 hour overnight sample collected on days 3,4,5,10,11,12,17,18,19 在3,4,5,10,11,12,17,18,19天的時候，連續16小時的過夜樣品將被收集

NSF Standard 61



Key

W/C	= washing and conditioning
< 72	= dwell between conditioning and exposure sequence (Maximum: 72 h)
2	= dump and fill 2 h intervals
16	= 16 h dwell (overnight)
16	= 16 h dwell for data
C	= collect prior day's 16 h dwell
64	= 64 h dwell (weekend)

Figure B1 – Exposure sequence for mechanical plumbing device

NSF Standard 61

Laboratory Testing 實驗室測試

- Analysis for lead on each day 3,4,5,10,11,12,17,18,19

  3,4,5,10,11,12,17,18,19天每天測試鉛含量
- Statistical Q value calculated from geometric mean of values and standard deviation. 通過幾何平均值和標準差來計算統計Q值
- Q = dose of lead in micrograms (ug).

  Q =鉛的劑量（微克）
- Q≤ 5.0 ug

NSF Standard 61

Laboratory Testing 實驗室測試

- All other chemical contaminants are analyzed from last water sample taken on day 19.

  第19天收集的水樣將用於分析其他化學污染物

NSF Standard 61

Laboratory Testing 實驗室測試

- **Formulation dependent examples:** 根據配方決定的例子：
  - **EPDM:** GC/MS, VOCs, phenolics, pthalates VOC,酚類，鄰苯二甲酸類
  - **Coatings**: GC/MS, bisphenol A and derivatives, epichlorohydrin, VOCs, solvent and reactant additives 雙酚A及其衍生物，環氧氯丙烷，VOC，溶劑及反應物添加劑

Product exposure types
產品浸泡方式

“in-vessel” 容器內

“in-product” 產品內

Exposures are performed as*“dump and fills”* (not plumbed in and not under pressure)

採用“填塞”的方式浸泡（不連接管道，不加壓)

NSF Standard 61

Toxicology Evaluation 毒理學評估

- Normalization - Contaminant concentrations are calculated to reflect in-the-field (at-the-tap) exposure levels

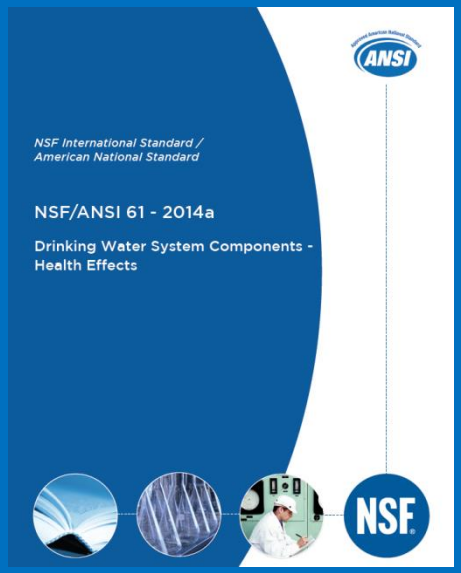
  標準化 - 根據實際使用情況換算污染物濃度

- Normalized concentration is compared to pass/fail criteria of the standard

  標準化後的結果會與標準比較，判定通過/失敗

NSF/ANSI 61

Drinking Water System Components – Health Effects



Acceptance criteria…認可準則

Regulated contaminants: 規定污染物

Includes USEPA and Health Canada regulated contaminants and EPA's health advisories.

包括USEPA飲用水標準及加拿大衛生部規定的污染物

Non-regulated contaminants: 未規定的污染物

More than 2000 risk values have been set by NSF to address leaching of chemicals from materials that contact drinking water. Utilizing Annex A Toxicology Review and Evaluation Procedures.

對於析出至水中的污染物，NSF已經做了2000餘次風險評估。參考附錄A毒理評估及評價程式。

NSFStandard 61

Listing and Certification 列名與認證

- Products that meet the requirements of the standard are Certified by NSF and entitled to bear the NSF Mark

  通過NSF認證的產品可以打上NSF標識
- Certified products appear in NSF Listings

  認證過的產品會在NSF官網上列名
- NSF Listings are available on the Internet at: NSF列名可以通過官網查詢http://www.nsf.org

NSF Standard 61

Maintaining Certification 認證維護

- Production facilities are inspected annually

  每年工廠審核

- Verify product is made with authorized components/materials.

  驗證產品是由認可的部件/材料生產的

- Samples are collected for retesting to verify compliance with NSF 61.

  樣品重測以驗證符合NSF61

Common Contaminant Failures
常見超標污染物

Metallic Products 金屬產品

- Lead 鉛
- Nickel and chromium for plated products 電鍍產品的鎳與鉻
- Copper occasionally for large products 大型產品偶爾會銅超標
- Hot water tends to increase failure rate for metals 熱水測試會增加金屬測試失敗概率

Non-Metallic Products 非金屬產品

- Solvents 溶劑
- Residual ingredients 殘留成分
- Reaction by-products 反應副產物
- Contaminants in ingredients 原料中的污染物

Product Failures
產品失敗

- If NSF certified products fail monitoring tests
  - Manufacturer must find source problem, correct
    製造商需找到失敗根本原因，並糾正
  - NSF retests product. NSF複測產品
  - If it passes it continues to be listed.
  - If it fails then product is removed from NSF Listings.

Lead Content US Safe Drinking Water Act
美國安全飲用水法中的鉛含量

- Redefines Lead Free 低鉛的重新定義
  - a weighted average of 0.25% for pipe, pipe or plumbing fitting or fixture.

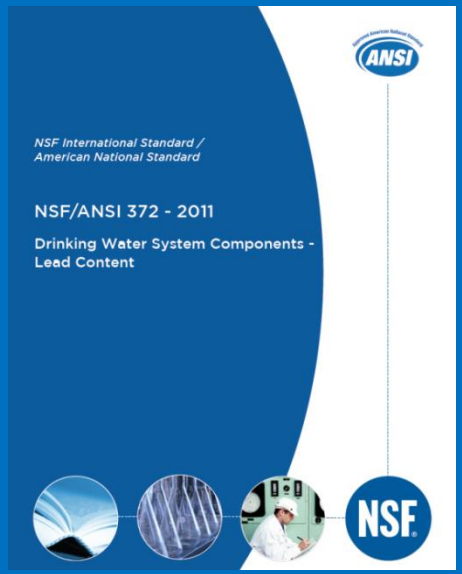
    管材，管材或者管道管件的加權平均鉛含量為0.25%
  - 0.2% solders and flux.

    焊接劑為0.2%。
- Effective Date January 4, 2014.

  2014年1月4日生效。

NSF/ANSI 372 Drinking Water System Components- Lead Content
NSF/ANSI 372 飲用水系統部件-鉛含量

- Scope: Any drinking water system component that conveys or dispenses water for human consumption through drinking or cooking.
- 適用範圍：任何輸配飲用水的部件，最終通過喝入或者烹飪進入人體
- First standardized in optional Annex G NSF-61.首次標準化是作為NSF-61的附錄G，可選項
- Now Annex G of NSF-61 references NSF 372.如今NSF61-G參考NSF372



Lead Content Calculation
鉛含量計算

Core requirement: 核心要求

Weighted average lead content≤ 0.25%

加權平均鉛含量 ≤ 0.25%

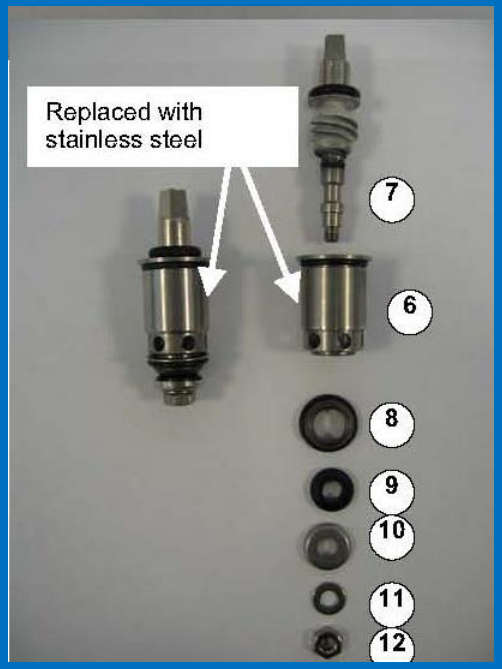
Formula:公式

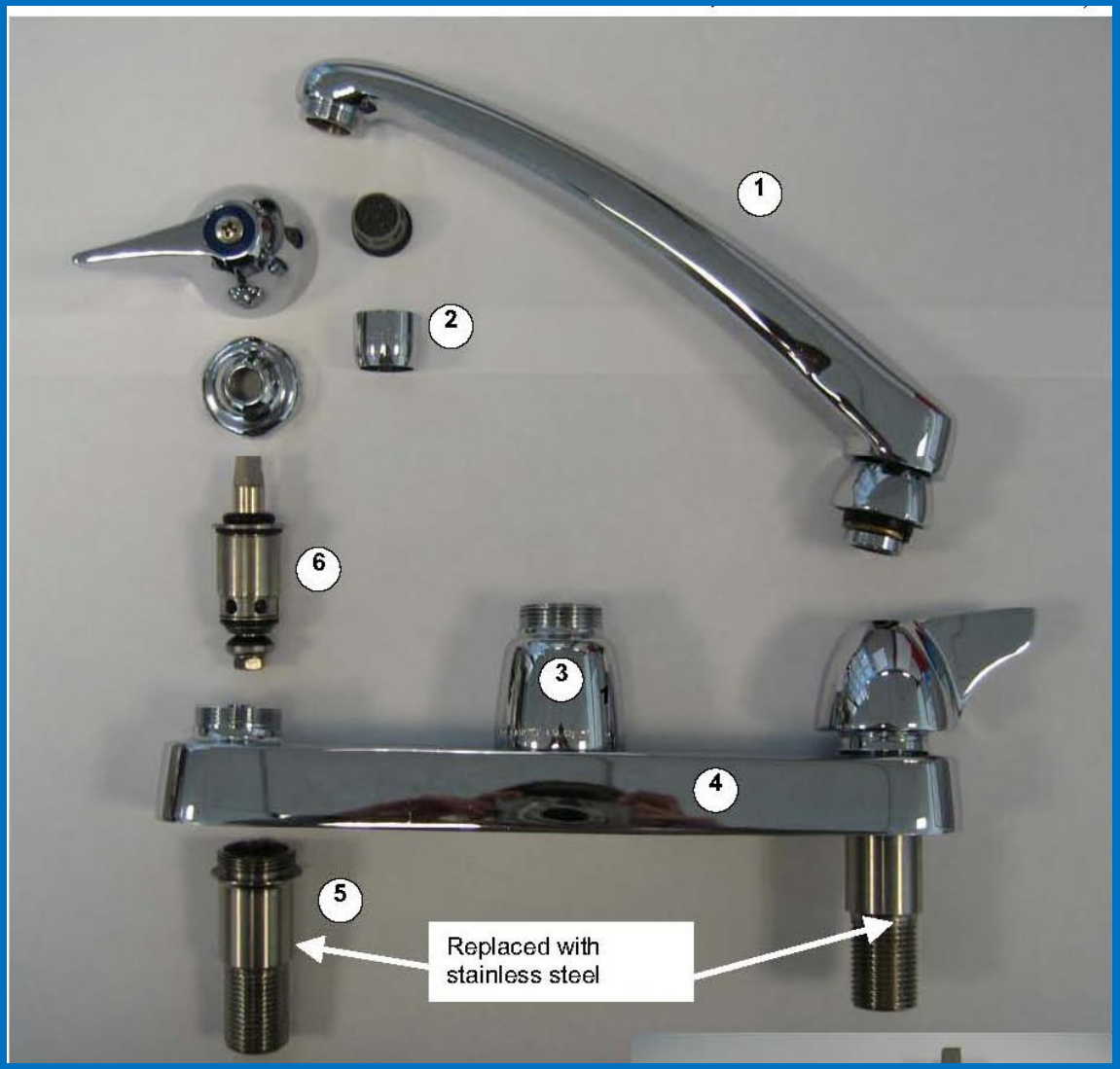
$$WLC = \sum_{c=1}^{n} \left(LC_c \times \left[\frac{WSA_c}{\sum_{t=1}^{n} WSA_t} \right] \right)$$

where;

WLC	=	weighted average lead content of product
LC	=	percentage lead content of component
WSA	=	wetted surface area of component
n	=	number of wetted components in product

Example faucet





Example weighted average lead contentcalculation加權
加權平均鉛含量計算案例

Component No.	Wetted surface area[1] (total = 61.94 in^2)	% wetted surface area (total = 100%)	% lead content	Contributing % lead
1	17.31	27.95	0.05	0.01
2	1.15	1.85	2.86	0.05
3	4.99	8.05	0.23	0.02
4	18.25	29.46	0.05	0.01
5	11.14	17.98	0	0.00
6	4.02	6.49	0	0.00
7	1.09	1.75	1.30	0.02
8	0.54	0.87	0	0.00
9	0.91	1.48	2.54	0.04
10	0.76	1.23	0	0.00
11	1.02	1.64	2.54	0.04
12	0.35	0.56	2.54	0.01
13	0.43	0.69	2.54	0.02
			Weighted average lead content =	**0.23%** **(in compliance)**

Are Coatings Permitted?

允許使用塗層嗎

When coatings are used NSF 372 requires evaluating the lead content of substrate.

若產品上有塗層，NSF372要求評估產品的基材

Acid Washed products evaluated based on untreated substrate.

對於酸洗產品，我們會評估未經處理的基材

How does NSF verify lead content?
NSF如何驗證鉛含量

1. Manufacturer disclosure. 製造商提供的資訊
2. Metal certification. 金屬材質報告
3. Factory inspection. 工廠審核
4. Product testing. 產品測試

Lead content screening by XRF
XRF掃描鉛含量

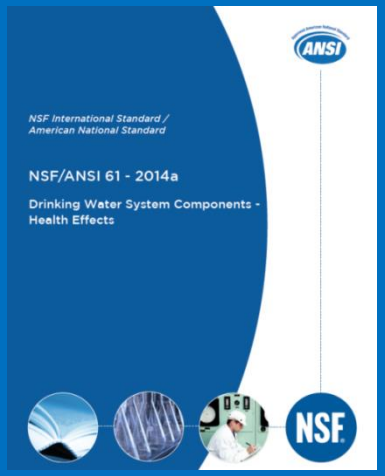
- Single component products (e.g. fittings) can be analyzed directly. 單一部件的產品（如接頭）可直接分析
- Multi-components products are disassembled. 多部件產品會被拆解
- Either may require cutting to expose surface areas.

  切割產品直至露出基材表面

Summary

小結

- NSF 61 covers all products in contact with drinking water. NSF61覆蓋所有與飲用水接觸的產品。
- Ensures chemical contaminants will not be added to drinking water at unsafe levels. 確保析出到飲用水中的污染物不至於超過安全的級別。



Summary

小結

- NSF 372 cover lead content of products that convey or dispense drinking water. NSF 372覆蓋所有飲用水輸配產品的鉛含量。
- Ensures lead content will meet the US Safe Drinking Water Act Requirements≤ 0.25% weighted average lead content.

  確保含鉛量符合美國安全飲用水法規定的低於0.25%的要求。
- NSF 372 was formerly in Annex G of NSF 61.

  NSF 372的前身是NSF61中的附錄G。

NSF Services
NSF提供的服務

NSF can provide testing and certification to NSF 61 and 372 and a wide variety of other plumbing product standards (WaterMark and WRAS).

NSF可以提供NSF 61和372測試與認證，也能提供其他管道類產品的認證（WaterMark和WRAS)

NSF has laboratories in: NSF有實驗室：

- Shanghai
- Ann Arbor, USA
- Wales, UK

NSF also can authorize manufacturer's laboratories to conduct testing.

NSF同樣可以授權製造商的實驗室進行測試。

California Proposition 65

加州65提案

CA Proposition 65
加州65提案

- Established warning labeling requirements for products that contain chemicals known to cause adverse reproductive effects or cancer.
- 對含有已知不良生殖影響或致癌的化學物質的產品，要求建立警示標識。

- For consumer products that contain a chemical known to the state to cause cancer:
- "WARNING: This product contains a chemical known to the State of California to cause cancer."
- 對於含有致癌的化學物質的產品：
- “警告：本產品含有加州當局已知可致癌的化學物質”
-

CA Proposition 65
加州65提案

- For consumer products that contain a chemical known to the state to cause reproductive toxicity:
- "WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductiveharm."
- 對於含有已知可導致生殖系統受損的化學物質的產品：
  警告：本產品含有加州當局已知可導致生殖系統受損的化學物質

- State of CA has established Safe Harbor levels for contaminants below which no warning is needed.
- 加州對污染物設立了安全限值，低於此限值則無需預警。

CA Proposition 65
加州65提案

- For lead the current Safe Harbor Level is a dose of 0.5 micrograms per day.

  鉛目前的安全線為每天0.5微克的劑量。

- There were legal settlements in 1990s for faucet and valve manufacturers that required warning levels about lead if they exceeded the NSF/ANSI 61 level (Q value) of 5.0 ppb.

  上世紀90年代，法律規定水龍頭和閥門製造商，如果產品鉛含量超過NSF / ANSI61標準要求的5ppb（Q值），需要有預警標識。

- Current proposal in CA to review and possibly lower the Prop 65 lead safe harbor level of 0.5 ug per day.

  目前加州正在評估將65提案中鉛的安全攝入量調至低於0.5微克/天的可能。

CA Prop 65 and Lead
加州65提案和鉛

- CA EPA Office of Environmental Health Hazard Assessment (OEHHA) considering possible amendments.
- CA EPA正在考慮修改65提案。
- Among these is to lower MADL for lead from 0.5 ug per day to 0.2ug per day for exposures that occur on a daily basis.
- 其中之一是，將鉛的MADL從0.5ug/天降低到0.2ug/天，從而減少每天的攝入量。
- Pre-Regulatory Draft of Possible Amendments at:
- 修改草案連結如下：
- http://oehha.ca.gov/prop65/CRNR_notices/pdf_zip/082815DraftPreRegulatoryLead.pdf
- http://www.oehha.ca.gov/prop65/CRNR_notices/pdf_zip/MADLproposal101415.pdf

Pre-Regulatory Proposal
Amendments to Section 25805

- Maximum allowable dose levels (MADLs) adopted in Section 25805(b)(1):
  - Highest exposures that can occur in a single day
- New subsection 25805(b)(2):
  - MADLs for certain chemicals for intermittent exposures
- Repeal and replace existing MADL for lead with MADLs in subsection 25805(b)(2)

Pre-Regulatory Proposal

25805(b)(2) *continued*

The maximum allowable dose levels for lead are as follows:

0.2 micrograms every day, or

0.3 micrograms one day in every 2 days, or

0.5 micrograms one day in every 3 days, or

0.7 micrograms one day in every 4 days, or

0.8 micrograms one day in every 5 days, or

1 microgram one day in every 6 to 9 days, or

2 micrograms one day in every 10 to 17 days, or

3 micrograms one day in every 18 to 26 days, or

4 micrograms one day in every 27 to 38 days, or

5 micrograms one day in every 39 to 54 days, or

6 micrograms one day in every 55 to 76 days, or

7 micrograms one day in every 77 to 115 days, or

8 micrograms one day in every 116 or more days

Prop 65 and Nickel
65提案和鎳

- CA OEHHA proposed 5 chemicals for review by the Developmental and Reproductive Toxicant Identification Committee (DARTIC):
- CA OEHHA 提出5種化學品，由發育與生殖毒物鑒定委員會（DARTIC）進行評估：
  - Nickel 鎳
  - Pentachlorphenol 五氯酚
  - Perfluoroctanoic acid 全氟辛酸
  - Perfluoroctane sulfonate 全氟辛烷磺酸鹽
  - Tetrachloroethylene 四氯乙烯
- DARTIC assigned a “medium to low” priority for consideration for listing nickel under Prop 65.
- DARTIC按“中到低”的原則優先考慮將鎳列入65提案。

NSF Services Prop 65
NSF為65提案提供的服務

- NSF can provide: NSF可以提供
  - product testing, 產品測試
  - test reports and 測試報告和
  - letters verifying contaminant levels and safe harbor levels for Prop 65 compliance.
    污染物濃度和符合65提案的安全線的證明

Summary Regulations USA and Canada
美國和加拿大法規的小結

- State (USA) and provincial (CAN) laws and plumbing codes establish requirements.
  美國和加拿大設立了管道規範及法律。

- Harmonized ASME/CSA standards for many products.
  在很多產品上，ASME及CSA進行了統一。

- Laws and codes require certification by accredited organizations like NSF.
  法律法規要求由經授權的組織進行認證，如NSF

Summary Regulations USA and Canada
美國和加拿大法規的小結

- NSF 61 is required for drinking water products in USA and Canada.

  美國和加拿大要求飲用水產品符合NFS 61的要求。

- This includes lead content testing to US requirement of 0.25% weighted average.

  包含美國對鉛含量的要求，為0.25%。

- California Proposition 65 has warning label requirements and Safe Harbor levels where warnings are not needed.

  加州65提案有預警要求，低於此安全線則無需預警。

Summary Regulations USA and Canada
美國和加拿大法規的小結

- Flow rate requirements: 流速要求
- Faucets must comply with flow rates requirements
  水龍頭必須符合流速要求
  - USA federal law 美國聯邦法律
    - ASME/CSA requirements
      ASME/CSA 要求
  - California Energy Commission 加州能源委員會
    - CEC registration to stricter flow rate requirements.
      CEC註冊制，嚴格的流速要求

Summary Regulations USA and Canada
美國和加拿大法規的小結

- WaterSense – Voluntary EPA Program
- WaterSense – 自願性EPA項目
  - Tank type toilets - Pre-rinse spray valve
  - 槽式廁所-預沖洗噴霧閥
  - Lavatory faucets -Irrigation controllers WB
  - 面盆水龍頭-沖洗控制器
  - Flushing urinals 沖洗小便池
  - Flushometer valves 沖洗閥
  - Showerheads 蓮蓬頭

Questions
疑問

Dave Purkiss
General Manager 總經理
NSF Plumbing Division NSF管道部門
+1-734-827-6855
Purkiss@nsf.org

Dave Purkiss
+1-734-827-6855
Purkiss@nsf.org