Western Occupational & Environmental Medical Association

WOEMA

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December 12, 2025

To: Joseph Alioto
Chair, Occupational Safety and Health Standards Board

Re: Petition to Revise 8 CCR § 5204 (Occupational Exposures to Respirable Crystalline Silica) to prohibit all fabrication and installation tasks on engineered stone that contains more than 1% crystalline silica

Dear Mr. Alioto and Board Members:

We are submitting this petition to the California Occupational Safety and Health Standards Board (Board) to initiate expedited rulemaking to implement revisions to § 5204 (Occupational Exposures to Respirable Crystalline Silica) that will prohibit all fabrication and installation tasks (cutting, grinding, polishing, etc) on engineered stone that contains more than 1% crystalline silica. This action is necessary in light of the continuing epidemic of silicosis that is causing disabling disease and death among California fabrication workers as a result of their workplace exposure to silica dust from engineered stone containing crystalline silica.

The Western Occupational and Environmental Medicine Association (WOEMA) is a professional non-profit association representing over 600 occupational medicine physicians and other experts in occupational and environmental health and safety, in seven western states (Arizona, California, Hawaii, Nevada, Utah, Colorado, and New Mexico). In February 2023, WOEMA requested that the Standards Board adopt an Emergency Temporary Standard (ETS) to control the hazards of airborne silica dust in shops that fabricate engineered stone. After the Board approved the Cal/OSHA ETS, the Board adopted permanent updates to § 5204 on December 19, 2024. The permanent standard continued the requirements of the ETS and introduced new protections for workers engaged in high-exposure trigger tasks (cutting, grinding, polishing, clean up, etc.) on engineered stone containing more 0.1% crystalline silica, or other silica containing products, including natural stone containing more than 10% crystalline silica. Among other requirements, employers must ensure that workers who perform high-exposure trigger tasks use effective wet methods; do not dry cut or sweep; perform high-exposure trigger tasks within regulated areas; use a full-face, tight-fitting, powered air-purifying respirator (PAPR); and are offered medical testing at no cost to the exposed worker, including a low-dose chest CT scan and a breathing test.

We appreciate the efforts of the Standards Board in implementing tougher standards in the last two year to prevent silicosis among California fabrication workers. The recent passage of SB 20 (*Occupational safety: high-exposure trigger tasks on artificial stone* - approved by Governor Newsom October 13, 2025) is also another step to grapple with the rising number of silicosis cases. SB 20 reinforces the current approach of education and enforcement by requiring attestation of worker training, making serious violations of the silica standard a rebuttable presumption, and enhancing outreach, education, technical assistance, and reporting of silicosis cases.

However, the evidence is now clear that engineered stone containing crystalline silica is too toxic to fabricate and install safely, and education and enforcement alone will not be sufficient to curtail the escalating occupational health emergency caused by this product.

As physicians who specialize in occupational diseases, we expect the silicosis health epidemic to continue unless there is expedited Cal/OSHA rulemaking that effectively prohibits all fabrication and installation (processing that generates dust) of engineered stone. This action is necessary to protect these workers and their families from a deadly disease and to open the market for safer products, which are already commercially available.

As you may know, the most effective approach to preventing occupational disease is elimination of hazardous products and substitution with safer and less toxic materials.

Fortunately, there are many safer substitutes currently available that can be used as alternatives to engineered stone containing crystalline silica. **Manufacturers of engineered stone (including those with countertop product lines containing crystalline silica) are currently offering safer alternative products in Australia that are crystalline silica-free, and which retain the same quality, look and feel of engineered stone containing crystalline silica.** These products emerged in the market in response to Australia's July 1, 2024 ban on engineered stone containing crystalline silica. They are commonly composed of amorphous (not crystalline) silica and are manufactured in a process similar to that of engineered stone.[1] It is important to note that crystalline silica causes silicosis; amorphous silica is a different substance and is much safer. A recent Australian government evaluation confirmed that the prohibition is largely working as expected, creating a rapid change in the market and new opportunities for safer products, while protecting workers from exposure to respirable crystalline silica.

If the Standards Board adopts the Australian approach and implements revisions to § 5204 that prohibit all fabrication and installation tasks on all engineered stone that contain more that 1% crystalline silica, **it is highly likely that these safer products will be made immediately available in the California market, without significant economic consequences for fabrication businesses and their workers**. IKEA has already removed engineered stone from its U.S. retail locations. Indeed, responsible fabrication businesses will likely experience no additional

[1] Unlike crystalline silica, which has long been known to toxic and carcinogenic, amorphous silica is relatively less toxic and is regulated in the workplace as a nuisance dust. One of world's leading developer of engineered stone (Breton) offers a crystalline silica-free aggregated manufacturing plant with the same aesthetic and technical features (see https://breton.it/en_na).

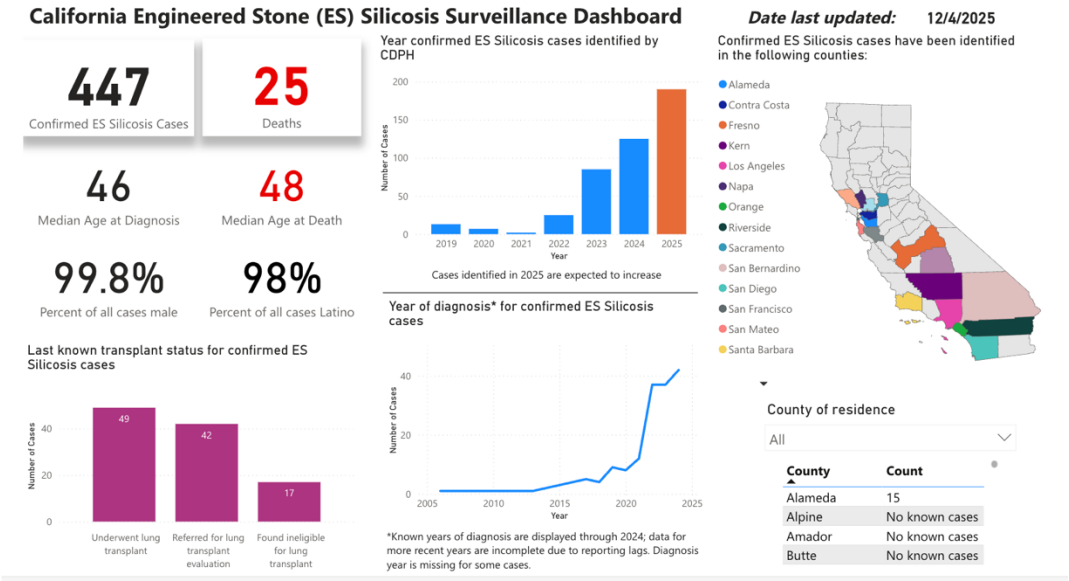
costs in complying with this new regulation, as they will continue to use the same dust control methods for safer products that they have installed to comply with §5204.

A more detailed scientific rationale for our request follows. There have been more than 100 scientific articles published over the past decade on the worldwide epidemic of silicosis caused by engineered stone. We recommend several reviews that summarize the evidence and highlight the dangers to workers posed by engineered stone and the need to take urgent policy action.[2] California academic and public health scientists have published many of these articles and can provide extensive scientific and technical knowledge as well.

1. **Rising counts of silicosis caused by engineered stone represent a health emergency.** Through passive surveillance, the California Department of Public Health (CDPH) continues to track silicosis cases caused by engineered stone. As of December 4, 2025 there were 447 cases with 25 deaths. The median age at diagnosis is 46, and the median age of death is 48.[3] As shown below, since the Board first considered engineered stone for regulatory action in 2023, case counts have continued to rise at an alarming rate:

[2]Fazio JC, Gandhi SA, Flattery J, Heinzerling A, Kamangar N, Afif N, Cummings KJ, Harrison RJ. *Silicosis Among Immigrant Engineered Stone (Quartz) Countertop Fabrication Workers in California.* JAMA Intern Med. 2023 Sep 1;183(9):991-998; Hoy RF, Dimitriadis C, Abramson M, Glass DC, Gwini S, Hore-Lacy F, Jimenez-Martin J, Walker-Bone K, Sim MR. *Prevalence and risk factors for silicosis among a large cohort of stone benchtop industry workers.* Occup Environ Med. 2023 Aug;80(8):439-446; Ramkissoon C, Gaskin S, Song Y, Pisaniello D, Zosky GR. *From Engineered Stone Slab to Silicosis: A Synthesis of Exposure Science and Medical Evidence.* Int J Environ Res Public Health. 2024 May 27;21(6):683; Fazio JC, Viragh K, Houlroyd J, Gandhi SA. *A review of silicosis and other silica-related diseases in the engineered stone countertop processing industry.* J Occup Med Toxicol. 2025 Mar 17;20(1):9; Heinzerling A, Harrison R, Flattery J, Fazio JC, Gandhi S, Cummings KJ. *Deadly Countertops: An Urgent Need to Eliminate Silicosis among Engineered Stone Workers.* Am J Respir Crit Care Med. 2025 Apr;211(4):557-559; León-Jiménez A, Martínez-González C, Cohen RA. *Engineered Stone and Silicosis: An Acceptable Risk?* Arch Bronconeumol. 2025 May;61(5):259-260.

[3] https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/Pages/essdashboard.aspx, accessed 11/30/25.



Source: California Department of Public Health

2. **Exposure to silica dust from engineered stone causes the rapid onset of silicosis.** In contrast to silicosis after workplace exposure to other silica-containing materials, silicosis caused by engineered stone dust is more severe and occurs more quickly. The short duration of exposure, severe disease and relatively young age of workers has been observed around the globe in countries where engineered stone has caused silicosis.[4] In the latest peer-reviewed publication from CDPH on silicosis cases in California, the authors found the median duration of exposure to silica dust from engineered stone was 19 years (range 1 to 39 years), with 24 patients experiencing exposure of less than 10 years.[5]

3. **Engineered stone is more toxic than other silica-containing materials such as natural stone.** The progressive nature and relatively short latency of silicosis among workers exposed to engineered stone dust suggests unique toxicity that cannot be attributed solely to the high levels of respirable crystalline silica produced by these materials. The progressive nature and relatively short latency of silicosis among workers exposed to engineered stone dust suggests toxicity that cannot be attributed solely to the high levels of respirable crystalline silica but may be due to a uniquely synergistic effect of crystalline silica together with other components. The polyester resins used in engineered stone can break down into volatile organic compounds (VOCs) during the fabrication process. Many of these VOCs are respiratory irritants or carcinogens. Engineered stone dust also contains trace metals that can cause inflammation in the lungs. Researchers have found VOCs and silica nanoparticles (in the sub-100 nm fraction) in aerosols released during the fabrication

[4] Hua JT, Zell-Baran L, Go LHT, Kramer MR, Van Bree JB, Chambers D, Deller D, Newbigin K, Matula M, Fireman E, Dahbash M, Martinez-Gonzalez C, León-Jimenez A, Sack C, Ferrer J, Villar A, Almberg KS, Cohen RA, Rose CS. *Demographic, exposure and clinical characteristics in a multinational registry of engineered stone workers with silicosis.* Occup Environ Med. 2022 May 3;79(9):586–93.

[5] Flattery J, Woolsey C, Fazio JC, Gandhi SA, Heinzerling A, Harrison RJ, Cummings KJ. *Silicosis Surveillance in California, 2019-2024: Tracking an Epidemic.* Am J Public Health. 2025 Nov;115(11):1913-1921.

of engineered stone into countertops and other products. Laboratory studies with human lung cells have shown that engineered stone dust causes significantly more inflammation and cell death compared to natural stone, with other non-silica ingredients independently associated with toxicity. Particle surface features may also be responsible for the unique toxicity of engineered stone on lung cells, with membrane destabilization and lysis, and the generation of reactive oxygen species that can add to lung injury. [6]

4. **The number of fabrication workers with silicosis is going to increase.** In early 2025, Cal/OSHA estimated there were approximately 800 fabrication shops that employed about 4,000 workers in California, and that the global rate of silicosis among workers in this industry was as high as 21%. At the time of Cal/OSHA's briefing to the Board in August 2025, CDPH had reported 364 cases of silicosis caused by engineered stone. Cal/OSHA staff reported that the *expected* number of cases of silicosis among these 4,000 workers was 680, based on a case rate of only 17%, and that the expected number of silicosis deaths among these 680 cases was 130 (19%), well above the 364 cases and 24 deaths CDPH had identified at that time through passive reporting channels. In their August briefing, Cal/OSHA updated the number of shops to 920 and the number of workers to 4,600, noting that "the projected case and fatality rates will be proportionately higher," and that "both the current conditions and the projections are alarming." [7] As long as exposure to crystalline silica dust from engineered stone continues, the total number of cases and deaths beyond these estimates will continue to grow.

5. **Airborne concentrations of respirable crystalline silica dust are above the Cal/OSHA limit in many fabrication shops.** After the first cases of silicosis were reported by CDPH in 2019, Cal/OSHA initiated a targeted inspection program of fabrication shops in California. An analysis of airborne silica dust concentrations during these inspections showed that over 50% of these workplaces had levels above the allowable OSHA Action Limit (25 ug/m^3) for respirable crystalline silica dust.[8] Similarly, a national survey of

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[6] Ramkissoon C, Gaskin S, Hall T, Pisaniello D, Zosky G. *Engineered Stone Fabrication Work Releases Volatile Organic Compounds Classified as Lung Irritants.* Ann Work Expo Health. 2023 Feb 13;67(2):288-293; Ramkissoon C, Song Y, Yen S, et al. *Understanding the pathogenesis of engineered stone-associated silicosis: The effect of particle chemistry on the lung cell response.* Respirology. 2024;29(3); Rishi K, Ku BK, Qi C, Thompson D, Wang C, Dozier A, Vogiazi V, Zervaki O, Kulkarni P. *Release of Crystalline Silica Nanoparticles during Engineered Stone Fabrication*. ACS Omega. 2024 Dec 10;9(51):50308-5031; Mandler WK, Knepp AK, Leonard SS, McKinney W, Keeley S, Qian Y. *Characterization of engineered stone dust-induced reactive oxygen species generation and cytotoxicity* in vitro*. J Toxicol Environ Health A. 2025 Oct 10:1-11;* Ophir N, Fireman E, Kramer MR, Korenstein R. *Artificial stone dust affects oxidative stress and epithelial barrier in CALU 3 cells.* Exp Lung Res. 2025;51(1):81-90; Pavan C, Fimiani M, Cananà S, Diana A, Marafante M, Bertinetti S, Escolano-Casado G, Mino L, Pisaniello D, Leinardi R, Tomatis M, Turci F. *The Combined Role of Silanols and Oxidative Stress in Determining Engineered Stone Dust Toxicity.* ACS Organic & Inorganic Au. November 5, 2025. DOI: 10.1021/acsorginorgau.5c00089.

[7] Cal/OSHA Update. *Silicosis among artificial stone fabrication workers.* Occupational Safety and Health Standards Board, August 21, 2025. Presented by Mike Wilson, Eric Berg and Betsey Noth, Cal/OSHA Research and Standards.

[8] Surasi K, Ballen B, Weinberg JL, Materna BL, Harrison R, Cummings KJ, Heinzerling A. *Elevated exposures to respirable crystalline silica among engineered stone fabrication workers in California, January 2019-February 2020.* Am J Ind Med. 2022 Sep;65(9):701-707.

fabrication shops conducted by the National Stone Institute (NSI) and the International Surface Fabricators Association (ISFA) found that 43.5% of shops had levels of respirable crystalline silica dust above this Action Limit.[9] Among 75 full shift personal air samples for respirable crystalline silica dust, 53% were above the OSHA 8-hour PEL of 50 ug/m3.[10] Even when engineering controls are used (such as wet methods and ventilation), workers' exposures to silica routinely exceed occupational exposure limits.[11] Many small fabrication shops are unable to afford the mechanical ventilation, wet methods and powered air purifying respirators that are necessary to protect fabrication workers and are required by section 5104. While there may be some shops that can reduce silica dust levels below the Cal/OSHA PEL, airborne concentrations of respirable crystalline silica in the majority of shops in California will likely continue to expose workers to unacceptable risks of a deadly disease.

6. **Enforcement of existing regulations to control silica dust exposures is not likely to prevent more cases.** The data presented by Cal/OSHA staff in August 2025 shows that the industry is routinely out of compliance with the revisions to § 5204 that require wet methods for cutting and grinding, frequent cleaning, providing and ensuring the use of appropriate respiratory protection, and conducting exposure monitoring for "high-exposure trigger" tasks. Cal/OSHA reported in August that the Division had opened inspections at 122 fabrication shops and had closed 99 of those inspections. Ninety-three of those 99 shops were found with violations of § 5204 or other Title 8 standards, representing 94% of shops. At 24% of shops (24), the conditions required the compliance officer to issue an Order Prohibiting Use, immediately shutting down the shop, or in some cases a specific operation, based on an imminent silica hazard. [12]

7. **Australia has successfully prohibited the use, supply and manufacture of all engineered stone containing more than 1% crystalline silica.[13]** The Australian

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[9] McGowan CM, Cantley LF, Klein R, Redlich CA. *Work Practices and Respirable Crystalline Silica Exposures in Stone Countertop Fabrication Shops.* Am J Ind Med. 2025 Nov;68(11):973-987.

[10] Soo JC, Houlroyd J, Warren H, Philpot BJ, Castillo S. *Respirable dust and respirable crystalline silica exposures among workers at stone countertop fabrication shops in Georgia from 2017 through 2023.* Ann Work Expo Health. 2025 Jun 30;69(5):473-485.

[11] Soo JC, Houlroyd J, Warren H, Philpot BJ, Castillo S. *Respirable dust and respirable crystalline silica exposures among workers at stone countertop fabrication shops in Georgia from 2017 through 2023.* Ann Work Expo Health. 2025 Jun 30;69(5):473-485.

[12] Cal/OSHA Update to Occupational Safety and Health Standards Board – August 21, 2025.

[13] The Australia domestic engineered stone prohibition commenced on July 1, 2024, with all jurisdictions except Victoria, Queensland and Australian Capital Territory implementing transition periods between July 1, 2024 and December 31, 2024. The prohibition applies to engineered stone benchtops, panels and slabs that contain at least 1% crystalline silica as a weight/weight concentration; are created by combining natural stone materials with other chemical constituents (such as water, resins, or pigments); and becomes hardened. The prohibition does not apply to engineered stone products that are not benchtops, panels or slabs, such as finished products including jewelry, garden ornaments, sculptures and kitchen sinks. The prohibition also does not include concrete and cement products; bricks, pavers, and other similar blocks; ceramic wall and floor tiles; sintered stone (provided it does not contain resin); porcelain products (provided they do not contain resin); roof tiles; grout, mortar, and render, and plasterboard. Provided that the

prohibition occurred in response to a similar public health emergency, characterized by a rapid rise of accelerated silicosis that disproportionately affected young Australian workers. Health authorities implemented the prohibition after consultation with multiple stakeholders, including researchers, unions, clinicians, industrial hygienists, shop owners and manufacturers.[14] Safe Work Australia (the Australia national safety and health policy body) recently completed a review of the engineered stone prohibition and concluded that the "prohibition of engineered stone benchtops, slabs and panels is working as intended at this early stage of implementation."[15] The report makes recommendations for improved implementation of the prohibition, including standardized testing, marketing, labelling and safety data sheets for engineered stone and alternative products, and consistent and clear guidance for the disposal of engineered stone and other silica containing products. Additional health monitoring and epidemiological studies are also recommended, including exposure assessment and evaluation of continued workplace controls. After a series of silicosis cases were reported in the UK, medical experts have called on the UK government to follow Australia's lead in banning artificial stone worktops.[16]

8. **Alternative products are readily available and price competitive in Australia in place of engineered stone.** Following the prohibition in Australia, numerous alternative products have emerged on the market with similar qualities, appearance and feel as engineered stone. These include crystalline silica free acrylic-based products; recycled glass products that consist primarily of amorphous (not crystalline) silica; and porcelain, sintered stone and natural stone.[17] An occupational medicine specialist from UC San Francisco (Robert Harrison, MD, MPH) recently returned from Australia, where he met with Australian researchers and fabrication workshop owners and confirmed there are numerous crystalline silica-free products that are widely available (personal communication). Of these, many products are composed largely of amorphous silica. These alternative products cost the same or less than prohibited engineered stone products, resulting in no economic impact to the fabricator or consumer.

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processing of engineered stone is controlled, the following exceptions also apply: research and analysis; to sample and identify engineered stone; removal, repair and minor modification of installed engineered stone; and the disposal of engineered stone.

[14] Cavalin C, Menéndez-Navarro A, Lescoat A. *The Banning of Engineered Stone in Australia: An Evidence-Based and Precautionary Policy.* Int J Soc Determinants Health Health Serv. 2025 Oct;55(4):415-423; Yates D, Brislane K, Coles J, Hosseini-Beheshti E, Linton A. *Comment on the Paper by Cavalin et al. The Banning of Engineered Stone in Australia: An Evidence-based and Precautionary Policy.* Int J Soc Determinants Health Health Serv. 2025 Oct;55(4):424-427; Tefera Y, Cole K, Ramkissoon C, Pisaniello D, Rowett S, Gaskin S, Coad M, Lalchandani NK, Williams C. *Opening the policy window: how Australia banned engineered stone.* Public Health Res Pract. 2025 Dec 10;35(4):PU25031.

[15] Safe Work Australia. *Review of the Engineered Stone Prohibition.* December 4, 2025. See https://www.safeworkaustralia.gov.au/doc/review-engineered-stone-prohibition.

[16] Feary J, Devaraj A, Burton M, Chua F, Coker RK, Datta A, Hewitt RJ, Kokosi M, Kouranos V, Reynolds CJ, Ross CL, Smith V, Ward K, Wickremasinghe M, Szram J. *Artificial stone silicosis: a UK case series.* Thorax. 2024 Sep 18;79(10):979-981; Wise J. *Doctors call for ban on cutting artificial stone after reporting first UK cases of silicosis. BMJ*. 2024 Aug 7;386:q1755.

[17] Ibid.

9. **Safe work practices must continue while alternative non-crystalline silica products are used in fabrication shops.** Data are limited regarding the health risks associated with amorphous silica exposure as a result of processing benchtops, panels and slabs, with some studies suggesting that there may be significant lung inflammatory response in animal studies.[18] There may also be an increase in the use of acrylic-based solid surfaces containing aluminum hydroxide, with two case reports of lung fibrosis linked to a similar product.[19] It is also likely that many fabrication shops will continue to fabricate countertops containing crystalline silica (for example, marble, granite, and quartzite). Therefore, it is essential that Cal/OSHA continues to enforce the provisions of 8 CCR § 5204 while the Board takes action to prohibit the fabrication of engineered stone containing more than 1% crystalline silica.

In summary, silicosis is a devastating, deadly, and thoroughly preventable disease. In light of the scientific evidence and the emergence of silicosis among hundreds of California stone fabrication workers, WOEMA is hereby petitioning the Standards Board to initiate expedited rulemaking to implement revisions to § 5204 (Occupational Exposures to Respirable Crystalline Silica) that will prohibit all fabrication and installation tasks on engineered stone that contains more than 1% crystalline silica. We stand ready to assist the Division and the Standards Board to clarify our request and answer any questions. Please do not hesitate to contact me or our legislative staff expert, Mr. Don Schinske (415-497-5716), if you have questions or need more information.

Sincerely,

Rosalie Banasiak, MD, FACOEM
President WOEMA

[18] Ramkissoon C, Pavan C, Petriglieri JR, Fimiani M, Pisaniello D, Gaskin S, Turci F. *Physico-chemical features and membranolytic activity of dust from low or no crystalline silica engineered stone with implications for toxicological assessment.* Sci Rep. 2025 Jul 15;15(1):25451; Ramkissoon, Chandnee; Gaskin, Sharyn (2025). *Engineered stone is now banned. How safe are new-generation low and no-silica stone materials?* The University of Adelaide. Journal contribution. https://doi.org/10.25909/29916743.v1

[19] Raghu G, Collins BF, Xia D, Schmidt R, Abraham JL. *Pulmonary fibrosis associated with aluminum trihydrate (Corian) dust.* N Engl J Med. 2014 May 29;370(22):2154-6; Corwin C, Waterhouse H, Abraham JL, Sanyal S, Crawford JA, Caddell M, Hodgson MJ. *Interstitial pulmonary disease and aluminum trihydrate exposure: A single case report and detailed workplace analysis.* Am J Ind Med. 2024 Mar;67(3):274-286.