

Brian L. Gulson

Brian leads a group at CSIRO and the Macquarie University Graduate School of the Environment that has been has been active in the development and application of lead isotopes to problems in the environment - especially related to mining - and to human health. Brian and the group have also undertaken some encouraging forensic investigations. Brian's research interests include environmental science especially environmental health including; biokinetics of lead in human pregnancy, toxic metals in mining and urban environments (impact on environment and humans, sources and pathways, remedial actions, risk assessment), radiogenic isotope methods in environmental monitoring, lead paint management, dietary intake of metals, pharmacokinetic modelling, forensic science.

Selected Journal Publications

Gulson, B.L. and Mizon, K.J., Lead isotopes as a tool for gossan assessment in base metal exploration. Geochem, Explor., 11, 1979, 299-320.

Gulson, B.L. and Mizon, K.J., Lead isotope studies at Jabiluka In "Uranium in the Pine Creek Geosyncline", Eds.J. Ferguson and A.B. Goleby, (IAEA, Vienna), 1980, 439-455.

Gulson, B.L., Tiller, K.G., Mizon, K.J. and Merry, R.H., Use of lead isotopes to identify the source of lead contamination near Adelaide, South Australia. Environ Science Technol., 1981, 15, 691-696.

Gulson, B.L., Perkins, W.G. and Mizon, K.J., Lead isotope studies bearing on the formation of the copper ores at Mount Isa, Queensland. Econ. Geol., 78, 1983, 1466-1504.

Gulson, B.L., Mizon, K.J. and Korsch, M.J., Fingerprinting the source of lead in Sydney air using lead isotopes. In "The Urban Atmosphere-Sydney, a case study", Eds. J.N. Carrass & G.M. Johnson (CSIRO Melbourne), 1983, 233-244.

Gulson, B.L., Korsch, M.J., Cameron, M., Vaasjoki, M., Mizon, K.J., Porritt, P.M., Carr, G.R., Kamper, C. and Calvez, J-Y., Lead isotope ratio measurement using the Isomass 54E in fully automatic mode. Int. J. Mass Spectrom. Ion Processes, 59, 1984,125-142.

Gulson, B.L., Perkins, W.G. and Mizon, K.J., Lead isotope studies bearing on the formation of the copper ores at Mount Isa, Queensland - A reply. Econ. Geol., 80, 1985, 189-190.

Gulson, B.L., Perkins, W.G. and Mizon, K.J., Lead isotope studies bearing on the formation of the copper ores at Mount Isa, Queensland - A reply. Econ. Geol., 80, 1985, 193-194.

Gulson, B.L., Porritt, P.M., Mizon, K.J. and Barnes, R.J., Lead isotope signatures of stratiform and stratabound mineralization in the Broken Hill Block, NSW, Australia. Econ, Geol., 80, 1985, 488-496.

Gulson, B.L., Meier, A.L., Church, S.E. and Mizon, K.J., A comparison of lead-isotope measurements on exploration-type samples using inductively coupled plasma and thermal ionization mass spectrometry. J. Geochem. Explor., 3-2, 1989, 311-313.

Gulson, B.L., Mizon, K.J., Korsch, M.J. and Noller, B.N., Lead isotopes as seepage indicators around a uranium tailings dam. Environ Science Technol., 23, 1989, 290-294.

Gulson, B.L., Mizon, K.J., Korsch, M.J., Eschnauer, H.R. and Lee, T.H., Are Tin-Lead Capsules a Source of Lead in Wine? Aust N.Z. Wine Industry Journal, 5, 1990, 274-276

- Lee, T.H., **Gulson, B.L.,** Eames, J.C. and Stockley, C.S., The lead content of Australian wines. Aust N.Z. Wine Industry Journal, 6, 1991, 257-261.
- **Gulson, B.L.,** Lee, T.W., Mizon, K.J. and Eschnauer, H., The application of lead isotope ratios to determine the contribution of the tin-lead capsule to the lead content of wine. Amer J Enology and Viticulture, 43, 1992, 180-190.
- Graham, I.J., **Gulson, B.L.**, Hedenquist, J.W. and Mizon, K.J., Petrogenesis of Cenozoic Volcanic rocks from the Taupo Volcanic Zone, New Zealand in the light of new Pb isotope data. Geochim. Cosmochim. Acta, 56, 1992, 2797-2820
- Fett, M.J., Mira, M., Smith, J., Alperstein, G., Causer, J., Brokenshire, T., **Gulson, B.** and Cannata, S., Community prevalence survey of children's blood lead levels and environmental lead contamination in inner Sydney. Med J Aust., 157, 1992, 441-445.
- **Gulson, B.L.**, Church, S.E., Mizon, K.J. and Meier, A.L., Lead isotopes in iron and manganese oxide coatings and their use as an exploration guide for concealed mineralization. Applied Geochem, 7, 1992, 495-511.
- Dale, L.S., Stauber, J.L., Farrell, O.P., Florence, T.M. and **Gulson B.L.**, A comparative study of ICP-MS and TIMS for measuring skin absorption of lead. In: Holland, G. and Eaton, N.A. (eds.). Applications of Plasma Source Mass Spectrometry II. Proceedings of the 3rd International Conference on Plasma Source Mass Spectrometry (Durham, U.K.; September 13-18, 1992). Special Publication (124): 1993, 124-129.
- **Gulson, B.L.**, Mizon, K.J. and Atkinson, B.T., Source and timing of gold and other mineralization in the Red Lake area, northern Ontario, based on lead isotope investigations. Can. J. Earth Sciences, 30(12), 1993, 2366-2379.
- Seccombe, P.K., Lu, J., Andrew, A.S., **Gulson, B.L.** and Mizon, K.J., Nature and evolution of metamorphic fluids associated with turbidite-hosted gold deposits: Hill End goldfield, NSW, Australia. Mineralogical Magazine, 57, 1993, 423-436.
- **Gulson, B.L.,** Howarth, D., Mizon, K.J., Korsch, M.J. and Davis, J.J., The source of lead in humans from Broken Hill mining community. Environ Geochem Health, 16, 1994, 19-25.
- **Gulson, B.L.** and Wilson, D., History of lead exposure in children revealed from isotopic analyses of teeth. Arch Environ Health, 49, 1994, 279-283.
- **Gulson, B.L.,** Law, A.J., Korsch, M.J. and Mizon, K.J., Effect of plumbing systems on lead content of drinking water and contribution to lead body burden. Science Total Environ., 144, 1994, 279-284.
- **Gulson, B.L.,** Mizon, K.J., Law, A.J., Korsch, M.J. and Davis, J.J., Source and Pathways of Lead in Humans from Broken Hill Mining Community an Alternative Use of Exploration Methods. Econ Geol., 89, 1994, 889-908.
- **Gulson, B.L.,** Howarth, D., Davis, J.J., Mizon, K.J., Korsch, M.J. and Law, A.J., Lead Bioavailability in the Environment of Children: Blood Lead Levels in Children can be Elevated in a mining Community. Arch Environ Health, 49, 1994,326-331.
- Stauber, J.L., Florence, T.M., **Gulson, B.L.** and Dale, L.S., Percutaneous absorption of inorganic lead compounds. Science Total Environ., 145, 1994, 55-70.
- Gulson, B.L. and Calder, I.C., Lead mobilisation during pregnancy. Med J Aust., 1995, 163, 47.
- **Gulson, B.L.,** Mahaffey, K.R., Mizon, K.J., Korsch, M.J., Cameron, M. and Vimpani G., Contribution of tissue lead to blood lead in adult female subjects based on stable lead isotope methods. J Lab Clinical Med., 125, 1995, 703-712. (*Editorial Comment* p. 677).

- **Gulson, B.L.,** Davis, J.J. and Bawden-Smith, J., Paint as a source of recontamination of houses in urban environments and its role in maintaining elevated blood leads in children. Science Total Environ., 164, 1995, 221-235.
- **Gulson, B.L.,** Davis, J.J., Mizon, K.J., Korsch, M.J. and Bawden-Smith, J., Sources of soil and dust and the use of dust fallout as a sampling medium. Science Total Environ., 166, 1995, 245-262.
- **Gulson, B.L.**, Nails Concern over their use in lead exposure assessment. Science Total Environ., 177, 1996, 323-327.
- **Gulson, B.L.,** Mizon, K.J., Korsch, M.J. and Howarth, D., Impact on blood lead in children and adults following relocation from their source of exposure and contribution of skeletal tissue to blood lead. Bull Environ Contam Toxic, 56, 1996, 543-550.
- **Gulson, B.L.**, Tooth analyses of sources and intensity of lead exposure in children. Environ Health Perspec., 104, 1996, 306-312.
- **Gulson, B.L.,** Mizon, K.J., Korsch, M.J. and Howarth, D., Non-orebody sources are significant contributors to blood lead of some children with low to moderate lead exposure in a major lead mining community. Science Total Environ., 181, 1996, 223-230.
- Gulson, B.L., Stable heavy isotopes in human health, J Roy Soc Western Australia, 79, 1996, 83-88.
- **Gulson, B.L.,** Mizon, K.J., Korsch, M.J. and Howarth, D., Importance of monitoring family members in establishing sources and pathways of lead in blood. Science Total Environ., 188, 1996, 173-182.
- Chiaradia, M., **Gulson, B.L.,** Pisaniello, D., McMichael, A.J., Mahaffey, K.R., Luke, C., Mizon, K.J., Korsch, M.J., Ashbolt, Vimpani, G. and Pederson, D.C., Stable lead isotope profiles in smelter and general urban communities. Comparison of biological and environmental measures. Environ Geochem Health., 18, 1996, 147-163.
- **Gulson, B.L.**, Sources and intensity of lead exposure in children in utero and early childhood from tooth analyses, Metal Ions in Biology and Medicine, Eds. P. Collery, J. Corbella, J.L. Domingo, J.-C. Etienne and J.M. Llobet Vol. 4, 1996, 635-638, (John Libby Eurotext, Montrouge France).
- **Gulson, B.L.**, Mizon, K., Korsch, M., Howarth, D., Phillips, A. and Hall, J., Impact on blood lead in children and adults following relocation from their source of exposure and contribution of skeletal tissue to blood lead, Bulletin of Environmental Contamination & Toxicology 56: 1996, 543-550, Springer Verlag New York Inc.
- **Gulson, B.L.**, Pisaniello, D., McMichael, A.J., Mizon, K.J., Korsch, M., Luke, C., Ashbolt, R., Pederson, D. G., Vimpani, G. and Mahaffey, K. R., Stable lead isotope profiles in smelter and general urban communities: a comparison of environmental and blood measures. Environ. Geochem. Health, 18, 1996, 147-163.
- **Gulson, B.L.** and Gillings, B.R., Lead exchange in teeth and bone a pilot study using stable lead isotopes, Environ. Health Perspect., 105, 1997, 820-824.
- Gulson, B.L. and Ray, J., Lead in dust and soil from day-care centres, NSW Public Health Bull., 1997, 8, 94-96
- **Gulson, B.L.**, Jameson, C.W. and Gillings, B.R., Stable lead isotopes in teeth as indicators of past domicile a potential new tool in forensic science? J. Forensic Sci., 1997, 42, 787-791.
- **Gulson, B.L.**, James, M., Giblin, A., Sheehan, A. and Mitchell, P., Maintenance of elevated lead levels in drinking water from occasional use and potential impacts on blood leads in children, Sci. Total Environ., 1997, 205, 271-275.
- **Gulson, B.L.**, Jameson, C.W., Mahaffey. K.R., Mizon, K.J., Korsch, M.J. and Vimpani, G., Pregnancy increases mobilization of lead from maternal skeleton. J. Lab. Clin. Med., 1997, 130, 51-62.
- **Gulson, B.L.**, Mahaffey, K.R., Jameson, C.W., Vidal, M., Law, A.J., Mizon, K.J., Smith, A.J.M. and Korsch, M.J., Dietary lead intakes for mother/child pairs and relevance to pharmacokinetic models. Environ. Health Perspect., 1997, 105, 1334-1342.

- **Gulson, B.L.**, Sheehan, A., Giblin, A.M., Chiaradia, M. and Conradt, B., The efficiency of removal of lead and other elements from domestic drinking waters using a bench-top water filter system. Sci. Total Environ., 1997, 196, 205-216.
- **Gulson B.L.** and MacDonald, K., Contamination of houses by occupationally-exposed workers from a lead-zinc-copper mine and impact on blood leads in the families, Occupational and Environmental Medicine, 54, 1997, 117-124.
- Chiaradia, M., **Gulson, B.L.,** James M., Jameson, C.W. and Johnson, D., Identification of secondary lead sources in the air of an urban environment, Atmospheric Environment, 31, 1997, 3511-3521.
- Chiaradia, M., Chenhall, B., Depers, A.M., **Gulson, B.L.** and Jones, B.G., Identification of historical lead sources in roof dusts and recent lake sediments from an industrialized area: indications from lead isotopes. Science Total Environ., 205, 1997, 107-128.
- **Gulson B.L.,** James, M., Giblin, A.M, Sheehan, A. and Mitchell, P., Maintenance of elevated lead levels in drinking water from occasional use and potential impact on blood leads in children, Science Total Environment, 205, 1997, 271-275
- Wlodarczyk, J., Jardim, K., Robertson, R., Aldrich R., Toneguzzi, R., Hensley, M., Gruszynski, C. and **Gulson, B.L.**, Measuring the amount of lead in indoor dust: long-term dust accumulation in petri dishes, NSW Public Health Bulletin, 8, 1997, 92-93.
- **Gulson, B.L.,** Jameson, C.W., Mahaffey, K.R., Mizon, K.J., Korsch, M.J., Cameron, M.A., Vimpani, G. and Eisman, J.A., Mobilisation of lead from the skeleton during the post-natal period is larger than during pregnancy, J Lab Clin Med., 131, 1998, 324-329.
- **Gulson, B.L.,** Cameron, M.A., Smith, A.J., Mizon, K.J., Korsch, K.J., Vimpani, G., McMichael, A.J., Pisaniello, D., Jameson, C.W. and Mahaffey, K.R., Blood lead-urine relationships in adults and children, Environ Res., 78, 1998, 152-160.
- **Gulson, B.L.,** Stockley, C.S., Lee T.H., Gray, B., Mizon, K.J. and Patison, N., Contribution of lead in wine to the total dietary intake of lead in humans with and without a meal: a pilot study. J Wine Research, 9, 1998, 5-14.
- **Gulson, B.L.,** Jameson, C.W., Mahaffey, K.R., Mizon, K.J., Patison, N., Law, A.J. and Korsch, M.J., Relationships of Lead in Breast Milk to Lead in Blood, Urine and Diet of the Infant and Mother, Environ Health Perspec., 106, 1998, 667-674.
- **Gulson, B.L.**, Yui, L.A. and Howarth, D., Delayed visual maturation and lead pollution Science of the Total Environment, 224, 1998, 215-219
- **Gulson, B.L.,** Mahaffey, K.R., Jameson, C.W., Patison, N., Law. A.J., Mizon, K.J., Korsch, M.J. and Pederson, D., Impact of diet on lead in blood and urine in female adults and relevance to mobilization of lead from bone stores, Environ. Health Perspect., 1999, 107, 257-263.
- **Gulson, B.L.**, Gray, B., Mahaffey, K.R., Jameson, C.W., Mizon, K.J., Patison, N. and Korsch, M.J., Comparison of the rates of exchange of lead in the blood of newly born infants and their mothers with lead from their current environment, J. Lab. Clin. Med., 1999, 133, 171-178.
- **Gulson, B.L.**, Pounds J.G., Mushak, P., Thomas, B.J., Gray, B. and Korsch M.J., Estimation of cumulative lead releases (lead flux) from the maternal skeleton during pregnancy and lactation, J Lab Clin Med 134, 6, 1999, 631-640
- James, M. and **Gulson BL**, Engine reconditioning workshops: lead contamination and the potential risk for workers: a pilot study, Occup Env Med 56, 1999, 429-431
- **Gulson B. L.**, Mizon K. J., Korsch M.J., Mahaffey, K.R. and Pederson, Limited seasonality effects on blood lead for a small cohort of female adults and children, Science of the Total Environment, 253, 2000, 119-126
- **Gulson B. L.**, Mizon, K. J., Palmer, J., Korsch, M.J. and Donnelly, J., Urinary excretion of lead during pregnancy and postpartum, Science of the Total Environment, 262, 2000, 49-55

- **Gulson B. L.**, Mizon, K.J., Palmer, J., Korsch, M.J., Patison, N., Jameson, W. and Donnelly, J., Urinary lead isotopes during pregnancy and postpartum indicate no preferential partitioning of endogenous lead into plasma, J Lab Clin Med, 136, 2000, 236-242
- **Gulson B L**, Mizon, K.J., Patison, N. and Korsch, M.J., Changes in blood lead after cessation of breastfeeding Environmental, Epidemiology and Toxicology 2, 2000, 235-240
- **Gulson, B.L.** Revision of estimates of skeletal contribution to blood during pregnancy and postpartum period. J. Lab. Clin. Med., 2000, 136, 250-251.
- **Gulson, B. L.**, Mizon, K. J., Palmer, J. M., Korsch, M. J. and Taylor, A. J., Contribution of lead from calcium supplements to blood lead, Environ. Health Perspect., 2001, 109, 283-288.
- **Gulson, B. L.**, Mizon, K. J., Palmer, J. M., Patison, N., Law, A. J., Korsch, M. J., Mahaffey, K. R. and Donnelly, J. B., Longitudinal study of daily intake and excretion of lead in newly born infants, Environ. Res. Sect. A., 85, 2001, 232-245.
- **Gulson, B.L.,** Eames, J.C. and Davis J., Evaluation of Exhibits from a Murder Case using the Lead Isotope Method and Scanning Electron Microscopy, Journal of Forensic Sciences, 47, 5, 2002, 1015-1021.
- **Gulson, B. L.**, Mizon, K.J., Patison, N., Law, A.J., Korsch, M.J., Jameson, C.W. and Mahaffey, K.R., Contribution of Lead in Infant Formula and Food to Lead in Blood and Urine of Newly Born Infants, Environ.Res., in press