been calculated preoperatively. Use of an assumed Ca_{O_2}–$C\bar{v}_{O_2}$ of 4.5 vol per cent, as is frequently done, would have led to both over- and underestimation of shunt by more than 50 per cent in several instances. *Summary:* Measurement of both Cc_{O_2}–Ca_{O_2} and Ca_{O_2}–$C\bar{v}_{O_2}$ is necessary if a meaningul estimation of shunt is to be made in individual cases. Intrapulmonary (Cc_{O_2}–Ca_{O_2} and systemic (Ca_{O_2}–$C\bar{v}_{O_2}$) oxygen content differences determine the intrapulmonary shunt: $\dot{Q}_s/\dot{Q}_t = Cc_{O_2}$–$Ca_{O_2}/(Cc_{O_2} = Ca_{O_2}) + (Ca_{O_2}$–$C\bar{v}_{O_2})$. With Cc_{O_2}–Ca_{O_2} on the Y axis and Ca_{O_2}–$C\bar{v}_{O_2}$ on the X axis, the relative influence of pulmonary and systemic factors on shunting can be readily determined. A series of straight lines representing per cent shunt are determined by substitution in the above formula; these radiate from the XY intercept. Since shunt values obtained using oxygen content differences as coordinates are not affected by the absolute value of the inspired oxygen tension, serial plotting of shunt values allows better assessment of cardiopulmonary therapy.

A Safer Method for Measuring Body-fluid Compartments in Patients. D. R. COOK, M.D., S. J. GALLA, M.D., and W. S. GUALTIERE, PH.D., *Departments of Anesthesiology and Physical Education, University of Pittsburgh, Pittsburgh, Penna.* Measurement of body-fluid compartments requires the administration of relatively high doses of radioactive tracers. Ordinarily, 10 μc of ^{131}iodine are used to measure plasma volume; 20 μc of ^{51}chrominum are used to measure erythrocyte mass; 70–100 μc of ^{35}sulfur are used to measure extracellular fluid volume; 1.0 of tritium is used to measure total body water. Although this represents a total body radiation exposure of only 0.402 rems, the testicular and thyroid exposure from the radioactive sulfur and iodine is 2.925 rems. Recently, liquid scintillation spectrometry has provided increased simplicity and accuracy in the measurement of the activity of the weak beta emitters. *Methods:* We devised a technique to reduce radiation exposure significantly, using a double-labeling liquid scintillation technique with quench correction. *Results:* We were able to reduce the ^{35}sulfur dose to 10 μc and the tritium dose to 0.5 mc per subject. Plasma volume and blood volume were measured with the Evan's blue–microhematocrit method, eliminating ^{131}iodine and ^{51}chromium. Total body radiation was reduced 72 per cent and the radiation exposure to the testes and thyroid was reduced 93 per cent. Our method was validated by measuring body fluid compartments in young men. The volumes obtained were comparable to those reported by Moore for men in the same age group. (Supported in part by USPHS Grant GM-13965.)

Cardiovascular Effects of Cyclopropane in Man. D. J. CULLEN, M.D., E. I. EGER, II, M.D., and G. GREGORY, M.D., *Department of Anesthesia, University of California, San Francisco Medical Center, San Francisco, Calif.* Simultaneous cardiac and peripheral vascular effects of cyclopropane were determined in nonmedicated volunteers, at normal Pa_{CO_2} and body temperature. *Methods:* Measurements were made with the subjects awake during controlled ventilation (Pa_{CO_2} 34 mm Hg) and at 15–20, 25–30 and 35–40 per cent alveolar cyclopropane (Pa_{CO_2} 38–40 mm Hg). *Results:* Cardiac output ($\dot{Q}$), heart rate (HR) and stroke volume (SV) remained at or near control values except at 35–40 per cent cyclopropane, when a 15 per cent decrease in $\dot{Q}$ occurred ($P < 0.05$). Mean arterial pressure (MAP), total peripheral resistance (TPR) and mean right atrial pressure (MRAP) rose significantly with onset of cyclopropane anesthesia. TPR and MRAP continued to rise as cyclopropane concentration increased. The peripheral vasculature showed arterial and venous constriction because forearm vascular resistance (FVR) increased while forearm venous compliance (FVC) decreased. When cyclopropane was acutely reduced from 35 per cent to 15 per cent, an overshoot of $\dot{Q}$, MAP and SV developed in the first two minutes. This overshoot reversed itself as MRAP continued to fall at ten minutes. *Summary:* We suggest that ventricular function is altered by cyclopropane because of the profound rise in